DOCUMENT RESUME

ED 247 533 CS 007 730

AUTHOR	Fleming, Delryn R., Ed.
TITLE	New Frontiers in Learning. Proceedings of the Annual Conference of the Western College Reading and Learning Association (16th, Portland, Oregon, March 24-27, 1983). Volume XVI.
INSTITUTION	Western Coll. Reading and Learning Association.
PUB DATE	83
NOTE	125p.
AVAILABLE FROM	Western College Reading and Learning Association, P.O. Box 4576, Whittier, CA 90607 ($8.00).
PUB TYPE	Collected Works - Conference Proceedings (021) -- Guides - Classroom Use - Guides (For Teachers) (052) -- Reports - Research/Technical (143)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Basic Skills; *Cognitive Processes; Computer Software; *Content Area Reading; Critical Reading; *Developmental Programs; Evaluation Methods; Higher Education; Learning Laboratories; Learning Strategies; Problem Solving; Program Content; Reading Comprehension; *Reading Diagnosis; *Reading Instruction; Reading Programs; Reading Research; Reading Skills; Reading Strategies; Remedial Reading; Study Skills; Teaching Methods; Two Year Colleges; Writing Skills

ABSTRACT

Drawn from a conference that focused on the present state and future direction of college reading and learning skills instruction, the articles in this collection are arranged into three categories: reviews, investigations and evaluations, and prescriptions and descriptions. Among the topics discussed in the 19 articles are the following: (1) the influence of cognitive and ethical development in critical reading, (2) the effect of social dialect on reading comprehension at the community college level, (3) evaluating microcomputer software for a community college reading and writing center, (4) the planning and evaluation of college learning, (5) diagnosing reading and reasoning problems of high achieving adults, (6) establishing an environment for problem solving, (7) content area vocabulary, (8) strategies for learning from textbooks, (9) developing computer software for study skills and vocational mathematics, (10) winning support for developmental skills programs, (11) improving rate and recall in reading, (12) problem solving and reading modules for trade students, (13) combining study skills instruction with subject matter teaching and tutoring, and (14) basic skills testing and programing for remedial reading. (FL)

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ED247533

JOURNAL OF COLLEGE READING AND LEARNING

VOLUME XVI

for

WCRLA

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PROCEEDINGS OF THE SIXTEENTH ANNUAL CONFERENCE OF THE

WESTERN COLLEGE READING AND LEARNING ASSOCIATION

READING
LEARNING ASSISTANCE
DEVELOPMENTAL EDUCATION
TUTORIAL SERVICES

Theme:
New Frontiers in Learning

March 24–27, 1983
Portland, Oregon

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PREFACE

Welcome to the first edition of *The Journal of College Reading and Learning*. The Board of Directors and Editorial staff of the Western College Reading and Learning Association hope the new name continues to represent the high quality of scholarship previously available through the *Proceedings* while more clearly indicating to those outside the organization the juried process which results in the carefully selected contents. In retaining the *Proceeding's* volume number, we intend continuity.

Due to the experiential, "hands on the computer" nature of the presentations in Portland, 1983, the number of manuscripts submitted was smaller than in years past. Of the 23 articles submitted, this volume includes 19. Since we had space available, we were able to accept a lengthy, but worthy, research project on student characteristics relating to academic outcomes. We also found it necessary to create new index headings for Bibliography and Professional Development. The organization is obviously growing in myriad ways. We are glad you are a part of this movement to new frontiers.

Delryn Fleming

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TWO DECADES OF COLLEGE-ADULT READING: WHERE TO FIND THE BEST OF IT

A. Garr Cranney
Brigham Young University
Provo, Utah

There has been substantial growth in the quantity and diversity of college-adult reading literature since 1960. Much of it, however, is scattered and difficult to locate. This bibliography is the result of several computer searches, correspondence with reading professionals, and a number of bibliographies from various other sources. It is organized by topic and reflects and updates a more comprehensive annotated bibliography by the same author in the January 1983 issue of the *Journal of Reading*.

The increase in literature has represented a number of educational trends. These include the presence of large numbers of underprepared adults in higher education, news media attention to literacy surveys, emergence of new fields such as reading for the aged, and interest by the military and industry in the reading skills of their employees. Contributing also to growth has been pressure to publish in universities, availability of federal funds, growth of learning centers, and new professional organizations.

Due to space limitations, the bibliography is of minimal length. Areas such as reading, linguistics, ESL, study skills, readability, vision, hearing, materials lists, testing, minority groups, and handicapped concerns are entirely omitted. Many other topics have only one entry. Each of the references was judged to be significant in the literature representing that topic.

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PUBLISHING WITH WCRLA

Delryn Fleming, Jane Hopper, Gwyn Enright,
Michael O'Hear and Joanne Carter-Wells

The following article represents a panel presentation by former and current editors of WCRLA publications. We hope it serves as a useful guide for publishing both with WCRLA and other professional groups. The first three editors were in attendance while the last two provided helpful advice prior to the presentation. The questions, in random order, are those most asked through the years.

QUESTION: I'm giving a workshop with colleagues this afternoon. I would like to submit a paper, but my colleagues do not want to. What should I do?
GWYN: Go ahead and write the paper yourself and address it to the *Proceedings* in your own name. Papers do not have to be strictly tied to presentations. One of the real heartbreaks of the editorial board has been reading a paper and saying, "You know, this paper really isn't the quality that we hoped for." Then one of the board members says, "But the presentation was great! I was there." I think it is important to understand that a great presentation does not always translate directly into a great paper, and a great paper often does not become an interesting presentation. A related question asks "What if I am in a large group and each of us wants to write a paper?" You can each submit a manuscript under your own name. Remember though, due to limited space in the *Proceedings,* those papers will be competing against one another.
DELRYN: One reason we allow you to submit papers up until two weeks after the conference is to encourage speakers to revise their presentations and make them into good papers.

QUESTION: How can I be involved in the Newsletter, *especially if I do not have an interest in a regular column?*
JANE: If you would like to write something for the *Newsletter,* we would like very much to see it. I will attempt to print the *Newsletter* deadline in each issue so that you can know when to submit something for publication. The

Newsletter deadlines for the coming year are January 5, May 1, July 31 and October 1. My hope is that these deadlines will stay consistent. Please keep in mind that it takes six weeks to get the *Newsletter* into the hands of the mailing service. So consider the timeliness of your content when you submit something. My address is on the back of the *Newsletter.* If you think your article pertains to a regular column, you can indicate that, and I will coordinate with the person in charge of that column.

QUESTION: How can I become involved on the Proceedings *editorial board?*
DELRYN: In the past we have gotten names for the board through the membership resources form. If you will indicate on that form that you are interested, we will contact you as an opening occurs. This year I am replacing one editor, and I will use the resources forms as a guide. I will ask the person selected to edit a manuscript as a type of test to see that he or she can adhere to our forms and be prompt in returning the manuscripts. I also look for expertise. This particular year, I want someone who has a reading background, probably at the university level to balance the board. This will give me a cross-section of people who can represent the different strands that we have in our organization. Michael O'Hear will also need some new people on his *Journal* board.
JANE: I do change column editors on the *Newsletter* also. If you are interested in that responsibility, please let me know.

QUESTION FROM FLOOR: What is involved for those who are interested?
DELRYN: For the *Proceedings*, editors work in teams of two. I send a manuscript to one editor, who reads and sends it to the team member. That initial reading is to determine if the paper has clarity and freshness, timeliness and validity. They will each make a decision: accept or not accept. That reading is not an editing or corrective reading. On the second reading, the editors receive a different set of papers, ones that have been accepted. These they will edit for correctness and style. We do some cutting, if necessary, and try to get to the central idea as quickly as we can. In 1982, we received thirty-six manuscripts. An editor will read most of them, but some for one purpose, some for another. Most of this work is done by August 1.

QUESTION: What if I miss the two-week-after-conference deadline? What would that mean to you?
DELRYN: If it is a matter of the mail delaying it a few days, that has little consequence. But let me explain about mailing. We have an editor in Hawaii, one in California and one in Indiana, and I have one more yet to appoint. The two people on the team have to mail to each other then mail back to me. It usually takes us four weeks for an accept/reject decision. Then, the paper has to go through an entire second mailing for editing. That means a late submission is going to be weeks behind. It could mean you are holding up the entire *Proceedings*. The initial tardiness may not sound like much to you, but if a paper is really late, it cannot ever get in sequence with the rest of the manuscripts.

QUESTION: When does the Journal *accept articles?*
DELRYN: One of the people who could not be with us today is Michael O'Hear, editor of the *Journal,* but he has sent his comments. He answers that question, "any time." The *Journal* accepts manuscripts all year around. It has been a developing publication and has been coming out in approximately every other issue of the *Newsletter.* He would like to build that to every issue. So when you send your manuscript to Michael, he routes them to his editorial board. Articles accepted are published in the next available *Journal.*

QUESTION: If I send in an article, does it matter if my manuscript is not in perfect form, since the printer has to typeset it anyway?
GWYN: It is not the printer's job to make corrections. Nor is it the editorial board's job. It is your job to pay attention to the style we use and do the best you can. Of course, the editors look over your paper carefully, and if they see those minor errors, they will try to make corrections for you. But they might not catch them all. Two things might happen if the errors are missed. First, on the second reading of the galley, the editor might see those minor errors that slipped through and correct them at that time. But the printer allows only a small "screw up threshold" before the organization is charged, even for small corrections. The second thing that might happen is that the editor has every right to choose to save the organization money and to not make those late corrections. If uncorrected copy comes out in print, an author will look very unprofessional.

QUESTION: Where did we get our style sheet and is there any way we can change it?
GWYN: That style sheet was compiled by Gene Kerstiens when he was editor of the *Proceedings.* It is part APA style and part Kerstiens' style. If you have some ideas of ways it could be made more helpful, I know that Delryn will welcome them.
DELRYN: I also had trouble with it in compiling Volume XV because it does not include enough examples for the variety of references we have used. When I asked Gene about it, his comment was that he had "improved" upon APA. He might have, but we need some more "improvements." (Ed.—Largely as a result of this discussion, this volume and future volumes under this editor will adhere strictly to APA style.)

QUESTION: What style is used for the Newsletter?
JANE: There isn't a particular style for the *Newsletter.* You may use any style you wish, so long as it is readable. In fact, I welcome different styles as they add freshness to the *Newsletter.* This is one of the reasons I try not to write any of the articles. It would be boring if all articles had only one person's slant. So, just try to have your information interesting, legible and meaningful. Take writing seriously enough to put it together in a formal way, and remember that I don't want to have to rewrite copy or *type* it to send it to the printer. He won't accept your handwriting.

QUESTION: Why do some volumes of Proceedings *have a title, while others do not?*
GWYN: The titles of the *Proceedings* IV through XI are the themes of the conferences. The conference theme automatically became the title of the volume. After XI, we, by board action, decided to call our publication just the *Proceedings*. Our main reason was we worried about our integrity because the papers included in the anthology really were not all on the stated theme. We did not want people to order the volume thinking this was a text about technological alternatives to learning, for example. That certainly was the unifying theme but was not an accurate volume title.

QUESTION: If I am rejected by the Journal *and the* Proceedings, *should I give up on that article?*
DELRYN: I am going to respond from Michael's comments which he sent. He says "absolutely not!" There may have been too many of the same type of articles in the *Proceedings*. Someone else may have approached your topic from a different point of view than you did. But he encourages you to write and write again, and to submit it to other journals. I quote:
MICHAEL: "I think many writers never submit articles because they fear that some faceless entity out there will dismiss their idea as trite, chuckle over their grammer, and stamp the writer as unfit. Let me say that, in fifteen years of serious attempts at publication, during which time I've had approximately thirty publications, I have not gotten over the fear of rejection. I still shelve a letter I know to be a rejection until after I open all other mail and even then face the letter hesitantly. However, this embarrassment does not stop me from typing a new cover letter and sending the manuscript out again.

"Anxiety should make us careful, but as writers, we should not let it disable us. After serving as an editor for several years, I can give assurances that most articles are seriously read and commented upon fairly. Professional journals' editors are glad to receive contributions. With rare exceptions they treat writers and their work courteously. For if writers didn't submit work, journals would cease to exist."
JANE: And whether it is true or not, I have heard that it took Dr. Seuss more than thirty submissions to find a publisher.

QUESTION FROM FLOOR: I have received valuable feedback on articles I have submitted to the Proceedings *whether my article was accepted or rejected. Can we count on the editors to give feedback?*
GWYN: The current editors feel the same way I did when I was editor. I did not mind at all, and I really welcomed questions about where a specific paper was in the editorial process, or how to revise a paper in trouble. Just pick up the phone and call and say, "Hey, I'm thinking about this . . . what do you think?" or "Where is my paper and what is happening?" or "I understand my paper didn't make it this time. Fill me in. What did the editors say?" I strongly encourge you to do that. You will receive valuable information you can use

next time you submit a paper. It is also very helpful to the editors to keep dialogue going with you.
DELRYN: We recognize that we are making judgment calls. I want to emphasize this is a volunteer organization. We hope we are doing the best job we can because we don't have any investment in messing you up in any way. We really want review to be a professional, constructive process. If you will approach us with that attitude, we would be glad to respond.

QUESTION: What are the mst common reasons for rejection of an article?
DELRYN: I think we have touched on some of those already. First, your ideas must be fresh, relevant and, when appropriate, documented. Second, your grammar, syntax and mechanics should follow standard usage rules. Please proofread. Although I ask permission to edit, because I do have space and uniformity constraints, I do not have the time nor the desire to rewrite your paper.
RESPONSE FROM FLOOR: Sometimes people can be overwhelmed by the enormity of the task. Whenever I hear about people making errors, I think "I hope that wasn't me." It is easy to become "blocked" and think you couldn't possibly be good enough. To become writers we need to put up with some rejection, or else we will never grow and learn, and never get anything published.

QUESTION: Would the editors mail some sort of "check-list" to show which particular area of rejection was pertinent?
GWYN: When I was editor, I felt that I had so much to do there was no way I could do that too. That is why I encouraged people to call. I always preferred to talk to people about their papers instead of firing off a list of all the editorial comments. There is something about the Western College Reading and Learning Association that makes most of us feel that we are all friends. It is more comfortable to explain to a friend in person or on the phone about a paper than to send a list of criticisms.

QUESTION: If we phone, would the editor be able to comment from file copies or "off the top of the head"?
DELRYN: I do have the papers in a file at the office with editors' comments available. They are easy to locate and accessible. If you call, I can give you some feedback.

QUESTION: What is the purpose of the coversheet form? Why must an author's name appear there only?
GWYN: The papers are all read "blind"—the editors do not know the author's name. The coversheet is separated right away and the paper begins circulating. That way we have the title, your name and address somewhere secure. It is also a way to make sure the table of contents is designed accurately. Finally, on that coversheet, you give us permission to do some editing.
DELRYN: Another thing it provides is phone numbers. On occasion I have had to call an author for additional information.

QUESTION: Because it takes so long to hear whether my article has been accepted by Proceedings, *may I submit it to another journal before I hear from WCRLA editors?*
DELRYN: Implied in that question is "it takes too long." I agree. We have already discussed the editorial board and the mailing schedule. This year I will write the authors after that first decision step of acceptance or rejection instead of waiting until the manuscripts have gone to the printer which is what I did last year. That should give authors an answer much sooner. Michael also sent a comment on this subject:
MICHAEL: "If quick editorial decision is a factor of importance, send to the newer journals. Most journals in developmental education are new. For this reason, the manuscript backlog is not as great as it is with older journals. Thus, once a piece is accepted, it usually is in print within the year."
DELRYN: A second answer is that you are really not supposed to submit an article to a second journal before you hear from the first one. It is one of the professional courtesies that we have. Neither are you supposed to publish the same article in two journals. That is not considered professional behavior.

QUESTION: May I submit my article to ERIC?
GWYN: Again, it is a question of professional ethics. You have the right to submit your paper to ERIC, but if it is appearing in *Proceedings* and ERIC, that reflects on your own professionalism. We are interested in your submitting it only to *Proceedings* to maintain the value of our publication and to promote the sale of our volumes.

QUESTION: Why can't I get Volumes I, II, and III?
DELRYN: They are out of print and out of stock completely, but are available in complete volumes in ERIC. As soon as we are sold out of any volume of *Proceedings*, it will be submitted in its entirety to ERIC. The editors for each volume are listed at the front of the index in Volume XV.

QUESTION: If I don't submit a paper at the WCRLA conference, what avenues do I have for publishing?
JANE: One of the ways you can see about publishing is to look at the information in the library about volumes that accept articles. If you are not sure about what those publications are, and there are quite a number of them, ask your librarian. It is her job to know the answers. Those publications will not only tell you names and addresses of publishers, but also the frequency of publications, the style sheet they use and the audience. It should help you begin to focus your remarks. (Ed.—In the Appendix to this article Jane provides a beginning list of publications to investigate.) Don't forget our own publications—the *Newsletter* and the *Journal*.

QUESTION FROM FLOOR: Why is the Board discussing a possible name change for the Proceedings?

DELRYN: Carolyn Walker has brought up the fact that at Stanford, her publication in *Proceedings* is not given full credit once administrators read the name. They do not know from the title that it is a juried journal. It sounds as if any paper presented at the conference is published. We are, therefore, giving some thought to changing the name of the *Proceedings*. What do you think?
CAROLYN WALKER: One possibility would be to have one title such as *The Journal of College Reading and Learning* for both publications—the current *Proceedings* and *Journal*. We could include only conference papers in one volume and all other submitted articles in a second volume. In other words, a member will receive two volumes a year.
COMMENT FROM FLOOR: I did not submit last year because my school does not recognize the *Proceedings* as a "legitimate" journal.
DELRYN: We would welcome comments on the name and format change. Any suggestions?

QUESTION FROM FLOOR: Would Yearbook *be more recognized than* Proceedings?
DELRYN: At yesterday's Board meeting, I heard that "annual," "yearbook" and "proceedings" went in the same category: non-juried, just accepted. How would you respond to the two-volume WCRLA publication, volume I being the juried *Proceedings* essentially and volume II being an annual publication for all other submitted and accepted papers?

QUESTION FROM FLOOR: Would Volume I be indicated as the conference proceedings?
DELRYN: If one were only reading a resume, he would have no idea there was any difference between volume or number I and II. You would have to be a part of our organization to understand that, or read the preface of the volume. Another decision the Board has made is to raise the dues and include a copy of the *Proceedings* as part of your dues. As you probably know, now you can be a paid member of WCRLA and not receive the *Proceedings*. It has been the conference registration that has included a copy of the *Proceedings*. Therefore, the sales of our volumes have depended too much on conference attendance. This change will eliminate the costly storage of excessive volumes. Beginning next year in San Jose, the annual dues will include a copy of the *Proceedings*.

QUESTION: Why is our Proceedings *not listed with the Wilson Library Index?*
GWYN: That is something we have been working on since Frank Christ was the editor of the first three volumes. Apparently the decision to include certain journals in that indexing process is made by a committee which meets, I think, every other year. They have to get testimonials and fan mail about our publication in order to consider including it in the index. We have tried to get that to them, but so far we have not been successful.

QUESTION FROM FLOOR: That is an important point, worth following up on. Can we encourage letters from the membership to that end?
JANE: We might have a column in the *Newsletter* explaining the need and asking people to follow through with letters.
KAREN SMITH: If anyone is interested in helping with that research to have us involved in a general index, I would like to know who you are. I would be delighted to put you on a task force for doing some research.

I would also like to add here that the organization needs to have new ideas for submission at a conference. People come to be challenged and informed, not to rehash what they already know. Please keep that in mind as you consider the call for conference papers.
DELRYN: One of the values of the new index in Volume XV is that it will show the "gaps" in our organization. You can look at it and see there are dozens of articles on learning assistance centers but only two on computer assisted instruction.

Also relating to the subject of the index, you need to know that indexing is a formidable task. I had to create subject headings then fit the main idea of the articles into the categories. You will find articles that are listed in two or three different areas. I hope you are not slighted in any way if you did not get into the category you thought you should be in. That may say something about my indexing skills and it may say something about your writing! In the future I would certainly welcome your suggestions for the index heading under which your article should be listed. I will include this request on the cover sheet.

QUESTION: In closing, what are some positive suggestions you can make for publishing?
GWYN: If I had just one thing to tell you, it would be to read! You could start with the bibliography Garr Cranney passed out in his session. (Ed.—available in this volume.) Keep up with what other people are writing. The main criterion that seems to eliminate papers is freshness of ideas. You don't want to spend your time explaining ideas that are already in the professional literature. Please, spend time reading before you propose a WCRLA workshop or presentation. Contribute something new.
JANE: We have a little more flexibility with the *Newsletter* because we are more ephemeral. If you find a topic that seems of current interest, I would welcome that submission. And I am likely to include it.
MICHAEL: "A significant idea is something that hasn't been said before in print or a topic on which little has been written. Conversely, an article on a topic which has been written up many times will probably not be publishable even if an author has discovered some minor variants on the topic. For instance, telling how a specific learning center functions, while interesting, is probably not going to sell. On the other hand, offering a new learning center model, compiling a summary of the literature on learning center evaluation, posing a philosophy of developmental courses, or suggesting a new slant on

individualized instruction should strike editors positively. In short, papers offering only slight variation from what has been done stand little chance of publication, and that chance rests only with *your* superior style or *our* editorial ignorance."

DELRYN: My suggestion is that you have a sense of audience. We say this to our writing students, but we tend to forget that we do have people reading this information. Who is your audience? Is it researchers? Practitioners? Community college instructors? We accept all of those, but sometimes the direction gets "muddled." An author starts out talking to community college instructors and ends up talking to researchers or administrators. It changes the focus of the writing. A central focus makes a better paper. And speaking of audiences, you have been a very attentive and involved one. We thank you.

APPENDIX

Camp, W.L. & Schwark, B.L. (Eds.) (1975). *Guide to periodicals in education and its academic disciplines* (2nd ed.). Nutuchen, N.J.: Scarecrow Press.

Lists seven reading publications with information for each concerning editorial policy, submission addresses, preparation guidelines and publications policies.

Hancock, D.O. (Ed.) (1976). *A publication guide to reading and language arts journals*. Fullerton, CA: Institute for Reading.

Uses a format similar to the Camp and Schwark work listing 28 reading and learning assistance journals.

International Reading Association. (1981). *Contributor's guide to periodicals in reading*. Newark, DE: Author.

Lists 83 publications.

Silverman, R. (1981). *Getting published in education journals*. Springfield, IL: Charles C. Thomas.

Dry but informative.

INFLUENCE OF COGNITIVE AND ETHICAL DEVELOPMENT ON CRITICAL READING

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Critical reading is taught in college to benefit society and the individual. One aim is to produce citizens who can form judgments about what they read based on sound reasoning and facts, not subjective data. Another aim is to help the individual develop thinking strategies which will be effective in the search for identity in a pluralistic world. Most critical reading teachers will agree with these aims. However, in pursuit of them, some instructors suffer occasional feelings of failure not stemming from poor instruction but from a limited understanding of a student's stage of development.

A typical scenario follows. The instructor, using one of the many published texts, has the students do exercises in recognizing tone, attitude, purpose, fact and opinion, and fallacious reasoning—the usual fare. When students demonstrate competency in these activities, they are assigned a reading selection on homosexuality, a subject about which they probably hold a bias. The selection is a well-written piece of propaganda by a college law professor. After reading it, students are allowed to discuss it in small groups with their peers. The instructor reserves comment. Then the class is asked to evaluate the selection as a valid source of information on the subject.

When student responses are read, the instructor is dismayed by the number of students who have either not recognized the bias and fallacious reasoning or have not let these defects diminish the value of the piece as a source of information on the subject. The instructor can take no solace in those who are successful. Suffering the paranoia of many teachers, he/she asks, "What did I do wrong?" In Piagetian terms, the students have learned, not developed. They have not been able to generalize their learning.

Cognitive and Ethical Development

Perhaps the problem is not with the way the critical reading skills were taught, but with the instructor's lack of awareness about the developmental stages of learners, which govern the way they perceive knowledge and values. The instructor does not have control of a student's view of the world, yet this view affects the way he/she processes information in a critical reading course. Nevertheless, the instructor in the scenario may find some help in William G. Perry's (1970) research on cognitive and ethical changes which occur in students during the college years and the scheme that grew out of this research. Acquaintance with the study may ameliorate feelings of failure, provide a new sensitivity for students' struggle to sort through diversity, and offer a new challenge in teaching critical reading.

Origin of the scheme. The Perry scheme of cognitive and ethical development grew out of research at Harvard University. William Perry was the director of the Harvard Bureau of Study Counsel, an undergraduate academic counseling unit which aided students with academic adjustment and study problems. In the early 1950's, Perry and his associates became impressed "with the variety of ways in which students responded to the relativism which permeates the intellectual and social atmosphere of a pluralistic university" (1970, p. 344). Using longitudinal interview data collected between 1954 and 1963, Perry and his associates identified and traced changes in students' ways of perceiving knowledge and values during the college years. From this research, Perry proposed a scheme to describe and explain the patterns of change he observed.

The Scheme

The scheme can appropriately be called a cognitive developmental model because it is based on the premise that development occurs in sequential, qualitative movements and it focuses on the student's internal cognitive structure. "The cognitive structure is essentially a set of assumptions which act as a filter dictating how the individual will perceive, organize, and evaluate events in the environment and, though less directly, how he will behave in response to these events" (Widwick, 1977, p. 35). It is the congruity or incongruity produced by the interaction with the environment which gives meaning to experiences and motivates action—cognitive or behavioral. In other words, development requires an exchange of knowledge or ideas in an optimal environment—one that challenges present congruity but does not overwhelm (Ginsburg & Opper, 1979). This is important in understanding how individuals move from one position to another in Perry's scheme.

The scheme includes nine positions that students pass through in their intellectual and ethical development. Perry (1970) chose to call them positions rather than stages as in other developmental models such as Piaget's (Ginsburg & Opper, 1979) and Kohlberg's (Smith, 1978) because (1) he made no claim about the duration of any position, (2) a person might operate from a range of positions at the same time, and (3) one might "retreat" to an earlier position or "escape" from the development approximately in the middle.

The Nine Positions of The Perry Scheme of Development

Dualism	1.	Basic Duality
	2.	Multiplicity Pre-Legitimate
	3.	Multiplicity Subordinate
Relativism	4.	Multiplicity Correlate: Relativism Subordinate
	5.	Relativism Correlate: Competing or Diffuse
	6.	Commitment Foreseen
Commitment	7.	Initial Commitment
	8.	Orientation In Implications of Commitment
	9.	Developing Commitments

The nine positions can be conceptualized into three major categories: dualism (positions 1–3), relativism (positions 4–6), and commitment (positions 7–9). Each position represents the way the student views the world. Relativism differs from multiplicity in that in multiplicity the student sees no commonality among the structures of diverse beliefs, behaviors, or experiences. In relativism the student is able to see the structural properties among diversities which lend themselves to analysis, comparison and evaluation (Perry, 1970).

Dualism. In positions one, two, and three, a person gradually modifies an absolutistic right-wrong outlook to make room, in some minimal way, for simple pluralism (multiplicity). In position one, the intellectual and ethical are closely linked. The individual perceives the world in terms of "we," right and good, versus "they," wrong and bad. There is absolute Truth and it is known by authorities (teachers, textbooks, scientists, etc.) who dispense Right Answers. The object is to study hard and do what the authority says: to learn the Truth. Position two is reached by discovering that authorities sometimes disagree or present multiple points of view. Dualism is maintained by dividing authority into those who are clear and those others who are needlessly (since right answers exist) confused. Even "those others" may not be confused; they may only be trying to teach students to find the Right Answer for themselves. Thus, multiplicity is still not legitimate. Position three is reached as conflicts mount, forcing the student to accept multiplicity as legitimate in some areas, but only temporarily. In other words, there is still absolute Truth. The authorities just have not found all the answers yet. Students in this position become concerned about how they are graded, if they are not graded on the Right Answer.

Relativism. Positions four to six entail the breaking down of dualistic structures, the acceptance of contextual relativism, and the recognition of the need for commitment in a relativistic world. Position four is reached when the individual realizes that uncertainty and diversity are more extensive than once assumed and discovery of the Right Answers is more remote than once imagined. However, Right Answers are not completely abandoned.

The world is simply divided into areas that have right answers and areas in which everyone has a right to his/her own opinion. A variation at this position is the individual's interpretation of relativistic thinking as to what the professors want students to do, not as to what the world requires.

By position five, the individual sees all knowledge and values—even that of the authorities—as contextual and relative. The recognition of contextual relativism legitimizes the student's own thoughts, and he/she begins to see the need and value of thinking for oneself. Thus, he/she is more able to examine assumptions and argue about premises. Here, unlike the person in position four, he/she sees the distinction between opinion and supported opinion. At first, the recognition of relativism is liberating; it frees the student of conflict within his environment. However, for some students, this unattachment to right answers is so frightening that they seek refuge and "retreat" back to dualism or "escape" to cynicism. Perry (1970) speaks of the courage it takes to give up the comfort of the old and face the uncertainty of the new.

Those who continue to position six see that life has no meaning without a stable reference point, and, in so doing, accept the need for personal commitment. They see a need to subject various beliefs to examination and then make a personal choice. This is contrary to the process of choosing beliefs in position one. Beliefs in position one were not subjected to objective examination. They were likely based on tradition, cultural conditioning, and such.

Commitment in relativism. Positions seven, eight, and nine trace the development of commitments in a person's actual experiences. Like those in position six, people in these positions are no longer grappling with ways of knowing. Instead the concern now is with ways of being. Thus, in position seven, the individual actualizes the need he/she saw in position six and makes a commitment in some area of life such as marriage, religion, or vocation. These choices can be perceived as the content of commitment. In position eight one focuses on the style of commitment. Here, one reflects upon the way commitments are made. He/she searches for a balance between the ways of choosing and "begins to reflect a personal style of decision making" (Orr, 1978, p. 90). For example, one can choose to be activistic versus contemplative or realistic versus idealistic (Widick, 1977). Commitment-making is an on-going process of evaluating and reevaluating changing experiences. Through the choices made and the style of choosing, one begins to affirm his/her identity. Such affirmation represents position nine. It is obvious that acquisition of these positions may extend beyond the college years.

Implications of Model

When Perry's model is considered, one can see that what appeared as instructional failure in the scenario presented earlier may have been only a mismatch between the teacher's expectations and the student's development. For example, consider the dualistic thinker. To him/her, homosexuality is either right or wrong. He/she sees no need to evaluate the quality of evidence given by an authority, a law professor in this case. The professor's view coincides with what other authorities (parent, ministers, etc.) have said. Therefore, the dualistic thinker is likely to simply repeat the law professor's arguments ignoring the appeal to emotions, slanted information, and fallacious reasoning. The early relativistic thinker (position 4) is not likely to fare much better. He/she has recognized that some things are just too difficult to decide and has relegated these to his/her version of relativistic thinking, which is, "Everyone has a right to his/her own opinion." He/she may recognize the bias, but to the student one discussion of homosexuality is as valid as another. He/she has not yet discovered that the relativistic nature of knowledge demands that one provide sound reasons and facts for his/her position. The exercises in recognizing fact and opinion were just that to this student.

To be successful with the assignment, a student would have to recognize that there are various acceptable points of view about homosexuality. In fact, the law professor's view may be acceptable. The successful student would fault the professor not for his point of view, but for his lack of acceptable support (position 5). It should be noted that even a student who appeared successful in the evaluation of the selection might not be. He/she may be doing only what he/she thinks the instructor expects rather than recognizing that it is the nature of knowledge that demands that one support a position with valid evidence. In any case, knowledge of the model can ameliorate some of the feelings of failure that critical reading teachers often suffer.

While the model provides one with a greater sensitivity to student development, it also presents a challenge. Now the critical reading teacher has an opportunity to do more than teach skills; he/she can promote cognitive development. To do this, one must balance sensitivity about the student's struggle to develop with responsibility to provide incongruity that leads to positive change.

Sensitivity requires that one realize that not only is it unkind to rip away another's beliefs, no matter how erroneous they may appear, but that it is ineffective. It is unkind because, to promote change, one must be construed as a member of the student's community—one of "us," not one of "them," (Perry, 1970). Therefore, the job of the teacher is one of gently providing just enough disequilibrium so that the student will grapple with his/her ways of thinking, but not so much that he/she will withdraw or retreat. The instructor must be supportive, understanding, and available to be a change agent (Coil, 1981).

In retrospect then, the instructor in the scenario need not fault him/herself for the disappointing responses to the critical evaluation of the law professor's propaganda. Instead, that energy should be directed toward devising feedback to such students which will maintain their confidence in the instructor, but which will also create sufficient disequilibrium to stimulate the student to assess his/her way of thinking about the world and knowledge. In fifteen weeks, one may only plant a seed, but the opportunity is there.

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THE EFFECT OF SOCIAL DIALECT ON READING COMPREHENSION AT THE COMMUNITY COLLEGE LEVEL

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This study investigates the impact of Black English on reading comprehension in California community college students. Many studies of the impact of Black English (BE) on reading comprehension have been conducted (Harber & Bryen, 1976), but few have been done with adults, and all those that have been done have major limitations that call their results into question.

Previous studies can be divided into four major types. One group of studies tested the comprehension of students on passages written in BE (Ruddell, 1965; Tutham, 1970; Wolfram & Fashold, 1969). In view of the fact that readings in the real world are generally in Standard English (SE), the items in the reading test employed in this study were written in SE.

Other studies assumed that all black students speak BE and all white students speak SE, and group the students into groups on the basis of race (Hackman, 1973; Hooper & Powell, 1971; Melmed, 1970; Nolen, 1972). Clearly, one cannot assume that all blacks speak BE and all whites speak SE (Dillard, 1972; McDavid, 1973; Ryatrom, 1973; Shuy, 1973): to speak of a dialect as BE is only to say that many people of that ethnic group happen to speak in that way, not to state that all do or that members of other ethnic groups might not speak in similar ways. To avoid this problem, all black students were used in this study, and they were divided into dialect speaking and nondialect speaking students on the basis of a test, The Social Dialect Feature Inventory (SDFI) (Pfaff, Desberg, and Marsh, 1974).

A third group of studies used a count of oral reading errors to assess the degree of dialect interference (Ames, Rosen & Olsen, 1971; Bartel & Axelrod, 1973; Rosen & Ames, 1972; Weber, 1973). Because comprehension is a key element in reading (Anastasiow, 1973; Casey, 1975; Goodman, 1965; Goodman & Buck, 1973; Labov, 1966; Venezky & Chapman, 1973), comprehension, not oral reading misstatements, was assessed in this study.

Finally, a group of studies assessed listening comprehension to measure dialect interference. Because visual input is a key factor in reading (Chomsky, C., 1970; Chomsky, N., 1970; Venezky, 1967, 1970), the students in this study read the material for themselves.

Method

A group of forty randomly chosen black community college students was selected from a community college in southern Los Angeles County. This group was divided into two groups on the basis of the results of the Social Dialect Feature Inventory: one group that spoke BE and one group that spoke SE. A teacher-made reading test was developed that included (1) items that were dialect-specific, based on the assumption that speakers of BE would say these items differently than speakers of SE (Burling, 1973; Dillard, 1972, 1977; Labov, 1966, 1970, 1972; Labov, Cohen, Robins & Lewis, 1968), who would use different grammar in saying them or pronunciation, as well as (2) items that would be the same in both dialects. It was hypothesized that speakers of BE would do significantly worse on questions that were dialect-specific than speakers of SE would, but would not do significantly worse on items that were not dialect-specific.

Testing

The SDFI was used to divide the subjects into the two groups, one speaking BE and one speaking SE. Because the SDFI is a criterion-referenced test, the groups were divided by considering those scores above the median BE and those below the median SE. In this particular study, there were three scores tied at the median, so these three and one other that was virtually the same were removed from the data pool. The procedure produced two groups of 18 subjects each. A two-way analysis of variance was applied to the scores these 36 students achieved on the reading test.

The reading test consisted of seven teacher-written short stories with 75 comprehension questions. In 36 of these questions there was potential for dialect confusion because it was assumed speakers of BE would have said the items these questions referred to differently than speakers of SE, who would have used different grammar and pronunciation. The other 39 questions were ones that referred to items that would be the same in both dialects.

Results

The hypothesis that BE speakers would score significantly lower than SE speakers on the dialect-specific dialect items was accepted because the F score of 11.91 exceeds the significance level of $F = 7.44$ at the .01 level with 34 degrees of freedom. The hypothesis that BE and SE speakers would not score significantly differently on the other 39 questions was also supported ($F = 6.344 < F = 7.44$).

To further explore the impact of BE on comprehension, the researcher divided the dialect-specific items into grammatical and pronunciation items, and carried out a correlation procedure to assess which area was most important. When the scores on the reading test were correlated with the scores on the SDFI (using all 40 scores), only the scores on the relationship between the SDFI and all the dialect-specific items and that between the SDFI and the grammatical items were significant. The correlation between the SDFI and the pronunciation factors was not significant at the .01 level.

Discussion

The results of this experiment would indicate that dialect differences do have a significant impact on reading comprehension in community college students. These findings agree generally to those of others (Harber & Bryen, 1976), but this study was conducted in a very different manner from previous studies. In this study, social groups were not mixed, the degree of dialect spoken by each student was assessed, the test was written in SE, silent reading was the factor tested, and adult students were used.

One implication of these results is that if one is to teach beginning reading to a group of students who speak more than one dialect, a factor found in virtually all schools in this country, one should begin with those elements that the dialects have in common with SE, and then, slowly, introduce the dialect-specific items. One cannot say from a correlation that the grammatical features of BE "cause" the reading difficulty, but if future studies should indicate this, the introduction of reading instruction would be greatly simplified. Although the grammatical features which must be introduced are complex, there are relatively few of them compared to pronunciation variables.

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WRITE TO READ: A TALE OF TWO TECHNIQUES

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Background

Legend has it that one sunny sabbath morning late in the nineteenth century Mrs. Darwin was disturbed by noises in her backyard garden. Opening a window, she observed her husband, Charles, purposefully blowing a trumpet directly at a daisy. She also noticed Thomas Henry Huxley on his hands and knees studying the same flower with singular scrutiny. Impatiently, and in keeping with Victorian wifery, she shouted, "Charles, what *are* you doing!?" With the ingenuous objectivity of a scientist and the restraint becoming a long-married man, he turned and answered, "I'm trying to get the attention of this daisy, and Thomas is watching to see whether it will respond." "Anybody knows that it won't respond!" she scoffed. To which Charles replied dispassionately, "How do we know? Has anybody ever tried?" And he returned to his experiment.

In somewhat the same spirit of artless curiosity, we began to requestion one of what Singer (1983) might call "landmark" theories of "learning from text." It occurred to us that, at least recently, no one had reinvestigated one of the truisms of college/adult reading instruction: Reading skills are most effectively taught in conjunction with instruction in writing, and the instructional integration of these two skills reinforces both synergistically (Douglass, 1982). Underpinning this seeming axiom are some sub-strata notions which also engaged our attention:

—Isolating reading and writing into two distinct instructional functions in a curricular sequence is the reverse of good judgment (Douglass, 1982).

—There may be no clear justification in learning theory for teaching reading skills before teaching writing skills (Piaget, 1972; Sullivan, 1967).

—Since students tend to perform roughly at the same level in each of these functions, this suggests that reading and writing be integrated in our instruction (Konshak, 1978; Loban, 1976).

—Developing certain writing sub-skills (like spelling and punctuation) can be an efficient avenue to developing reading skills (Chomsky, 1971).

—The act of reading, which has an aural genesis, can be enhanced by practicing writing, which also is aural in inception (Kerstiens, 1978).

The Study

During the fall 1982 semester we enjoyed some of the conditions requisite for a study. We were both teaching equivalent day (morning) classes in reading, English RB. Students enrolled in these classes were those who had scored at 148 (converted score) or lower on the *Cooperative English Test*, Form 1A. We were using the same textbooks and were sharing equivalent laboratory facilities. And finally we were pursuing the same departmental criterion objective—to have students score at or above 149 points (sixteenth percentile) on the Reading Section of the *Cooperative English Test*, Form 1B, at the end of the semester.

We decided that one of us would diligently teach those skills that are prescribed in the course outline: comprehension, vocabulary, reading rate, and study skills (Group A). In this way, Group A students were afforded treatment that is considered typical for such courses (Kerstiens, 1979; Littrell, 1976). Group A students, then, practiced writing only incidentally and as part of normal procedure in reading courses.

Students taught by the other instructor (Group B) were afforded the same treatment but at seventy-five percent strength; the remaining twenty-five percent of Group B instructional time and effort was devoted to very basic practice in oral dictation. Group B, then, spent one-fourth of their in-class instructional time (about one hour per week) copying (inscribing) material being dictated by the instructor. They were directed to reproduce a passage exactly as dictated. This routine was called an oral transcription exercise, and students were furnished advanced copies of a given passage one week previous to each weekly session. The object was that students would produce transcripts free of mechanical mistakes such as omissions, misspellings, grammatical or punctuation errors. During testing, the passage and/or parts of it were repeated orally on demand, as many times as students requested, and until they had finished copying. Thus students were encouraged to encode accurately relatively simple academic prose that they had had opportunity to review and study.

The obvious deficiency in this two-group research design notwithstanding, we proposed to post-test both groups of students at semester's end to learn whether significant differences existed between the groups' mean post-test scores that measured students' levels on:

—the Reading Section of the *Cooperative English Test*, Form 1B (a speeded reading test);

—The *Nelson Reading Test*, Form B (another speed-sensitive test);

—the *Minnesota Reading Assessment*, Form 1A (a test only minimally sensitive to reading rate or speed of comprehension);

—the independent reading level scores on the *Degrees of Reading Power* test (a test that is essentially untimed); and

—the converted scores on an oral transcription test (also untimed and reproduced in Appendix A).

In short, we were trying to learn whether careful attention paid to students' practice in copying from dictation would favorably affect reading and writing skills levels.

Results

Descriptive data for the reading scores are presented in Tables 1 through 4. Data for the passage reproduction (the oral transcription test) are presented in Table 5. Means, standard deviations, differences between means, t-scores, and significance levels are listed for each test.

Effect on vocabulary. The results on the *Minnesota* and *Cooperative* vocabulary subtests were nonsignificant. Significant results were rendered at the .01 level on the *Nelson* vocabulary subtest.

Effect on comprehension. Nonsignificant results were recorded on the comprehension tests of the *Cooperative, Nelson*, and *Minnesota*. Only the *Degrees of Reading Power* (DRP) showed significance in comprehension for the group trained in oral transcription (Group A).

TABLE 1
Cooperative English Test, Form 1B

	Group A (N = 56)		Group B (N = 68)				
Area	M	SD	M	SD	D	t-score	Level
Vocabulary	147.60	3.05	148.08	6.24	.48	.56	NS
Level of Comp.	147.32	5.48	146.61	7.94	.71	.59	NS
Speed of Comp.	149.93	6.01	145.32	7.02	4.61	3.97	.01
Total Reading	148.45	3.76	146.47	6.23	1.98	2.17	.05

TABLE 2
Nelson Reading Test, Form B

	Group A (N = 53)		Group B (N = 61)				
Area	M	SD	M	SD	D	t-score	Level
Vocabulary	59.44	3.88	63.60	6.49	4.16	4.25	.01
Comprehension	43.51	3.85	44.8[illegible]	4.45	1.32	1.32	NS
Total Reading	103.45	3.63	108.75	5.75	5.30	6.30	.01

TABLE 3

Minnesota Reading Assessment, Form A

	Group A (N = 54)		Group B (N = 54)				
Area	M	SD	M	SD	D	t-score	Level
Retention	14.81	4.65	16.38	5.15	1.57	1.67	NS
Vocabulary	37.24	4.82	36.84	6.33	.40	.37	NS
Paragraph Comp.	14.87	4.57	16.24	5.53	1.37	1.41	NS
Total Reading	66.93	3.67	69.83	4.83	2.90	3.53	.01
RATE (WPM)	239.66	4.72	226.88	5.79	12.78	12.65	.01

TABLE 4

Degrees of Reading Power, Form PA-2

	Group A (N = 55)		Group B (N = 58)				
Area	M	SD	M	SD	D	t-score	Level
Ind. Level	57.00	1.83	61.05	3.88	4.05	7.10	.01

TABLE 5

Oral Transcription Test

	Group A (N = 57)		Group B (N = 57)				
Area	M	SD	M	SD	D	t-score	Level
Writing	33.11	5.18	38.68	5.55	5.57	5.57	.01

Effect on total reading. Significant gains were made by Group A (.01 level) in total reading scores for the *Nelson* and *Minnesota* tests. Contrary results favored Group B (.05 level) on the *Cooperative* test.

Effect on rate. Significant effects were displayed by Group A on the Speed of Comprehension subtest of the *Cooperative* and also on the rate score of the *Minnesota* (.01 levels).

Effect on oral transcription. Overall, Group B's performance was significant at the .01 level on the oral transcription test.

Summary and Discussion

The following discussion concerns differences found between Groups A and B as they were measured in various ability areas.

Effect on vocabulary. The effect of oral transcription on vocabulary scores seems to be inconclusive except for one significant score on the *Nelson* test. It cannot be concluded that practice in oral transcription has a direct effect on vocabulary.

Effect on comprehension. Mean score comparisons on typical standardized tests, represented by the *Cooperative, Nelson,* and *Minnesota,* indicate no significant differences between Group A and Group B. However, the *DRP* test, a modified cloze, did show differences at the .01 level. Basically an untimed test of reading power, the *DRP* may be sensitive to aspects of reading comprehension not measured by the usual standardized test. In any event, the overall effect of oral transcription on reading comprehension is inconclusive.

Effect on total reading. Significance (.01 level) favoring Group B was recorded for both the *Nelson* and the *Minnesota* in Total Reading (a combination of vocabulary and comprehension). However, the *Cooperative* showed the reverse: Group A was superior at the .05 level.

This mixed result is interesting, but this discrepancy might tell more about the tests than it does about the experimental treatment. We feel that the *Cooperative* is less discrete than the other two tests for lower readers because its high level of difficulty may encourage wild guessing on the part of lower readers. If lower readers improved by practicing oral transcription, their improvement would surface only on measures commensurate to their ability. This might explain significance on the *Nelson* and *Minnesota* for Group B.

But why is Group A superior on the *Cooperative,* a test more discrete for higher readers? We surmise that the *Cooperative* might reflect extra gains made by the higher readers in Group A. Remember that Group A spent twenty-five percent more time on reading practice than Group B. This gain would be reflected by the *Cooperative* if readers of higher ability made unusual gains. This same test may mask gains made by lower readers, however, because it is not sensitive at those levels. Our overall conclusion, then, is that there might be some variance *within* Group A and Group B. Perhaps they should not be treated as a monolithic group, as poor readers and better readers might respond differently to oral transcription. A later analysis will isolate low readers from higher readers to examine this possibility.

Effect on rate. Group A was scored higher than Group B on both measures of reading speed (.01 level). The relative slowness of Group B might be explained by their repeated practice in precisely recording speech. Group B was trained to examine words very closely in order to exactly reproduce them.

Effect on oral transcription. As expected, Group B was superior on the oral transcription test. This result was not surprising since they had been practicing all semester on this specific skill. But the fact remains that the mission was accomplished: Group B wrote more accurately than Group A. Oral transcription exercises would seem to be a viable way to improve writing ability, at least in recording speech with mechanical accuracy.

OTE scores partitioned for lower readers. A partitioning of these oral transcription scores into separate groups of lower and higher readers allowed us to examine how reading ability affected writing ability.

Teaching Method	Reading Ability Lower	Reading Ability Higher
Group A	N = 24 X = 29.96 Z = −5.52 Sig. = .01	N = 31 X = 36.58 Z = .28
Group B	N = 28 X = 37.50 Z = 1.13	N = 27 X = 40.37 Z = 3.77 Sig. = .01

Figure 1. Analysis of Oral Transcription Scores Partitioned by Reading Ability and Teaching Method

The paragraph subtest of the *Minnesota* was used to divide the readers into two categories—those scoring 15 and below were called lower readers; those scoring 16 and above were called higher readers. It must be remembered that all students were in a remedial situation, but vast differences in reading ability can exist in these classes.

When viewed in light of reading ability, the most significant cell (.01 level) contained the poor readers of Group A. Without any training in oral transcription, their writing skills were measurably deficient. Since future classes in the English curriculum require writing, these lower readers are particularly handicapped. They would seem to be the most fruitful ground for instruction in the art of oral transcription.

The lower readers of Group B, trained to copy from dictation, score within the normal curve on the writing test. A comparison with the lower readers of Group A illuminates a startling difference (6.65 Z score change). After exposure to oral transcription practice, our bottom readers showed by far the greatest improvement. We found this gratifying because it is the poorer readers that cause us the greatest concern: they are the ones who will find it most difficult to meet the writing requirements of college courses. In our study, oral transcription helped these lower readers most.

OTE scores partitioned for higher readers. The better readers in Group A were within the normal curve even without any training in oral transcription. The positive relationship between reading ability and writing ability is demonstrated by the better readers in Group A. Even without practice in oral transcription, this group displayed ability to copy from speech. Clearly, better readers would not benefit from oral transcription to the same extent as lower readers.

The better readers in Group B scored significantly higher than those in other cells. This was the only one of the four cells that demonstrated a capacity to score significantly higher (.01 level) on the oral transcription test.

Conclusions and Recommendations

1. There seems to be a positive relationship between reading ability and writing ability.

2. Practice on oral transcription exercises would seem to increase ability to copy correctly from dictation.

3. Such practice on oral transcription may have a slowing influence on reading rate; extra practice on speed reading may be required to negate this effect.

4. Lower readers would seem to be the group benefiting the most from practice in oral transcription. Even within the confines of a remedial English class, better readers do not benefit to the same extent as lower readers.

Epilogue

Was Darwin's daisy influenced by the trumpeting? We fancy it was, although we had to wait a century for the technology that would verify plants' phonotropic responses. Does oral transcription favorably affect students' communication skills? Doubtless, but whether the amount of gain is worth the effort will need to be answered by a more carefully controlled study than ours.

APPENDIX A

Oral Transcription Test

In college, you will come into contact with a variety of instructors. As in all walks of life, you will be confronted with different personalities. There will undoubtedly be teachers who are easy to approach and those that are difficult to deal with. Furthermore, you will prefer some teaching styles over others. In short, college requires a continuous adjustment to different instructors. Do not lose sight of your ultimate goal, which is to complete your education successfully. Remember that no matter how difficult an individual instructor may be, you will probably have to deal with that instructor for only a short time. So work as hard as you can and do not let personal feelings interfere with your progress. Before you know it, the semester will be over.

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EVALUATING MICROCOMPUTER SOFTWARE FOR A COMMUNITY COLLEGE READING/WRITING CENTER

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Your college has just bought a microcomputer, and you've decided to join the era of high technology. Now what do you do? The classic mistake of many neophytes in this field is thinking that they can take a simple programming course and write programs for their computer. Wrong. Writing one program is equivalent to writing an entire textbook (Glotfelty, 1982, p. 92). Therefore, the best place to start is evaluating current software.

Problems and Solutions

Software evaluation presents several challenges for the beginner. First, it is not exactly like evaluating a textbook; you must understand the complexity of the microcomputer itself, as well as the software. Second, it is hard to find any uniformity in computer evaluation forms. Microcomputers are a relatively recent phenomenon, having been marketed extensively in education only since 1978 (Thermas, 1981, p. ix). Because of this recency, few definitive guidelines are available. Almost every magazine article on computer assisted instruction carries its own evaluation form. A final problem for neophytes is that most forms are too short. They assume a knowledge of both software and hardware (computers) that many users do not yet have.

Recognizing these problems, I have developed a thorough list of guidelines for evaluating reading and writing computer software. They represent "state-of-the-art knowledge, experience, and intuitions about what constitutes a 'good' computer program" (Heck, Johnson, & Kansky, 1981, p. 3). Understanding these guidelines should enable you to venture wisely into the purchase of your first software.

Three general categories will be examined. First, is the software educationally sound? Next, does it fully utilize the computer? Finally, will this software be valid for educational, as opposed to personal use?

Educational Validity

The first and most important criteria center around the educational soundness of the software. If a program is not pedagogically sound, other criteria need not be considered. At this level, the criteria are the same as those used to evaluate reading or writing textbooks. Much of the software published in 1982 and early 1983 does not meet this standard.

1. Are the objectives well-defined and current?
2. Is the scope of the program complete?
3. Is the program factually correct?
4. Is it well-organized and logical?
5. Does it teach or just diagnose?
6. Is it clear and interesting (directions and text)?
7. What about the questions? Are they multiple choice? What level?
8. Can a teacher insert his/her own words, vocabulary level, and age level?
9. What about the interest level, reading level, vocabulary level, and age level?
10. What level does it function at (drill and practice, tutorial, application of skills, independent learning, simulation)? Is that level appropriate?

Computer Utilization

Computers are capable of functions that books can never duplicate. Does the software take advantage of a computer's sophisticated processing, or is it just electronic page-turning? Software in reading and writing is currently lagging behind sophisticated software in medicine, aviation, business, and math.

1. Is computer instruction the right way to go with this skill or just a gimmick?
2. Is the branching structure highly ramified, or does it just parallel a programmed text?
3. Is the software just drill and practice, or does it include games? or simulations?
4. Does it make ample use of graphics capabilities?
5. If graphics are used, are they understandable and necessary—or just flashy?
6. Is learning adjusted to individual pace?
7. Can you by-pass instructions once you know them?
8. Can you stop mid-stream, and come back to restart at that point?
9. Does the program personalize for you?
10. Are there summary reports?
11. Is there a student record keeper?
12. Are the directions clear and consistent about how to enter information?
13. Is the method of answering consistent?
14. If questions are asked twice, is the screen cleared before the original question reappears?
15. Are the error messages non-judgmental?
16. Do answer-analysis routines permit a wide range of responses?

17. Is the timing about right for responses and for booting up new material?
18. Is there a teacher mode? Does it serve any purpose?
19. Is the output screen jammed with text that is non-essential? Does the text run off the screen at the sides, or at the top? Does the text disappear without your directing it to?
20. Does it include different sensory learning modes: visual, tactile, audio?

Special Educational Considerations

The final criteria for evaluating software are related to its planned use. Selecting software for educational use is different than selecting it for home use. In a school setting, all disks will receive heavier use, and many students will not be familiar with their care. Furthermore, educational software "should provide instructional experiences heretofore impossible as well as imaginative approaches to existing components of the curriculum" (Heck, Johnson & Kansky, 1981, p. 31).

Institutional considerations. You need to know the capabilities of the existing hardware at your institution. If the software under consideration does not fit your current hardware, adaptation is prohibitive. In addition, software published today is expensive. Cost will be a factor in your decision.

1. What computer is it made for?
2. Does it need a color screen?
3. Does this software need two disk drives?
4. Does it match the memory capabilities of your computer?
5. What size printer is needed for this software?
6. What is the policy on making copies of disks?
7. What is the policy on how many students are allowed to use the disk?
8. Can more than one student use the material at the same time?
9. What is the cost per student?
10. Would you prefer a range of programs under $100, or one expensive and comprehensive program?
11. What priority does this have at your institution?

Teacher considerations. Because these programs are for educational use, teachers must take into account special considerations that are unnecessary to consider for home use.

1. Can teachers who know little about computers figure out the software?
2. How many teachers will be using it? How will that affect teacher management systems?
3. How many students fit into the management system?
4. How much information can the teacher get about student responses?
5. Can teachers add their own lessons or words?
6. How much time does it take to preview? How easily can you get in and out and see samples of the total program?
7. Will teachers have to write problems to go with it?
8. Will teachers have to write supplementary instructions?

9. Are instructions clear, logical, and at an appropriate reading level?
10. Is documentation available and thorough?

Learner considerations. Once you have previewed the program thoroughly, you must go through it again from a student's viewpoint.

1. How long does it take to get through the program? How long is each lesson?
2. Is teaching on the computer or in an accompanying book?
3. What happens if you give absurd responses? Does it blow the program?
4. Is it understandable what kind of response is called for?
5. What about typing errors? Are they correctible? How does the program handle misspellings?
6. What about the sounds? Do they add or detract?
7. Are right answers reinforced better than wrong answers?
8. Is it consistent?
9. Can you finish from the start to end without terminating?
10. What is the size of the print?
11. How easy is it for someone who doesn't know computers?
12. Do learners LIKE the program?

Summary

The result of considering these guidelines should be two-fold. You should have increased understanding of the scope of computers and software. Also, realizing that every teacher has a set of unique evaluative considerations, you should be able to adapt to personal and local needs, by selecting which criteria will be important for you. Be wary of mass-produced evaluative forms that give over-simplified ratings.

Many different factors, then, must enter into a search for the best software. Teachers must learn to be selective and to appreciate the complexities of the microcomputer. Now is the time to start.

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SUCCESS: A MODEL FOR THE PLANNING AND EVALUATION OF COLLEGE LEARNING

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One of the characteristics of our profession, whether we call ourselves reading specialists, developmental educators, or learning assistance specialists, is that we are a profession consisting mainly of practitioners. We have been more interested in helping our students and getting our programs going than in research and evaluation of those programs. Research and evaluation, therefore, have lagged behind our programming efforts.

The decade of the eighties, however, has brought pressures from a number of sources which demand that we be accountable for the effectiveness of our efforts to help students succeed academically. Unfortunately, we are usually asked deceptively simple questions, such as "Are your programs working?"

Hunter Boylan (1983) recently completed a survey of evaluation reports of developmental programs across the country and asked that basic question: Is Developmental Education working? He asked three basic sub-questions: (1) Are students gaining in skills? (2) Are they making better grades? (3) Are they being retained in college longer?

A recent evaluation of federally funded Special Services projects (1982) asked further: "Are your students graduating at higher rates than students who are not involved in your programs?" The programs, which mainly serve freshmen and sophomores, were hard pressed to show graduation rates, resulting in a negative evaluation.

The investigation described here attempted to ask these evaluation questions more specifically. If a program is working, what parts of the program contribute most to that success? Boylan (1983) found that the more comprehensive programs seemed to have better results. Is that attributable to some particular component of a comprehensive program or the sum of all the parts? The questions themselves turn out to be quite complex indeed.

The Model

A major key in investigating what program components work for which students is the development of an appropriate model to guide the study. Models can provide an important connection between abstract theories and the practical solution to a question (Bean, 1982). For example, we may develop theoretical constructs about the relationships between motivation and academic achievement, but until we can translate the abstractions into something practical they will have little meaning for us.

The basis for the model ultimately developed for this study was Bloom's Theory of School Learning (1976), which describes the variables affecting student achievement of a specific learning task (see Figure 1). The input variables are student characteristics, for Bloom maintains that "The history of the learner is at the core of school learning" (1976, p. 13). Certainly, developmental programs have long recognized the necessity of diagnosing where the student is before choosing the appropriate instruction.

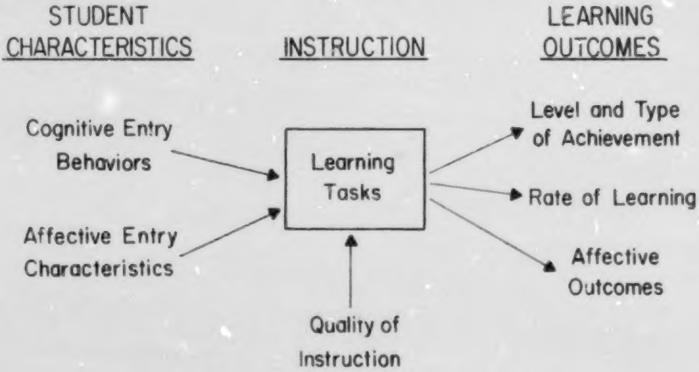
STUDENT CHARACTERISTICS
INSTRUCTION
LEARNING OUTCOMES
Cognitive Entry Behaviors
Affective Entry Characteristics
Learning Tasks
Quality of Instruction
Level and Type of Achievement
Rate of Learning
Affective Outcomes

Figure 1. Major variables in Bloom's Theory of School Learning (from Bloom, *Human Characteristics and School Learning*, New York: 1976, p. 11).

The entering student characteristics Bloom looked at were cognitive entry behaviors, or the extent to which the student has the skills and knowledge necessary to engage in the learning task, and affective entry characteristics, or the extent to which the student is motivated to engage in the learning task. Impacting on the learning task is the quality of the instruction offered. Bloom listed three learning outcomes: the level and type of achievement, or the cognitive outcome; rate of learning; and affective outcomes, or to what extent the student is now motivated to engage in a similar learning task again.

The model developed for this study is applied to the specific learning task of learning to succeed in college. The variables included in the model (see Figure 2) are described below.

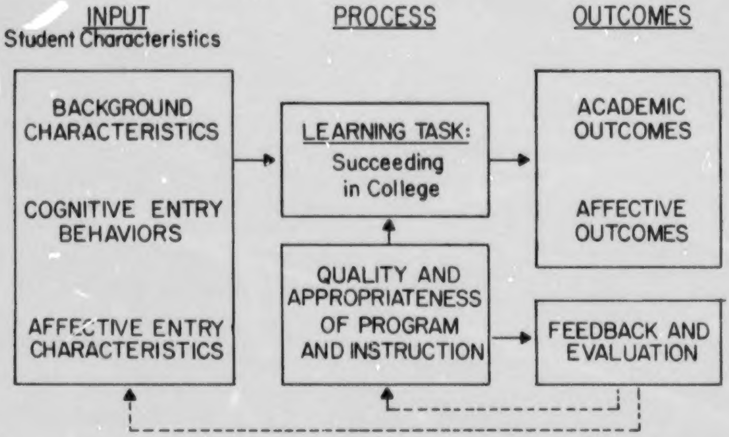
INPUT
Student Characteristics
PROCESS
OUTCOMES
BACKGROUND CHARACTERISTICS
COGNITIVE ENTRY BEHAVIORS
AFFECTIVE ENTRY CHARACTERISTICS
LEARNING TASK:
Succeeding in College
QUALITY AND APPROPRIATENESS OF PROGRAM AND INSTRUCTION
ACADEMIC OUTCOMES
AFFECTIVE OUTCOMES
FEEDBACK AND EVALUATION

Figure 2. A theory of learning for college success.

Student Entry Characteristics

The student entry characteristics used in this study were divided into three categories: background characteristics, cognitive entry behaviors, and affective entry characteristics. The *background characteristics* were of two kinds: (1) demographic data, including sex, age, race, college, class, and hours working per week; and (2) reasons for probation, as indicated by eight factor scores based on student rankings of reasons for their being on probation.

The *cognitive entry behaviors* studied here were student academic status and cumulative grade-point average at the end of Fall Semester 1980.

The *affective entry characteristics* were indicated by scores on the following measures: (a) Study Habits and (b) Study Attitudes as measured by the Brown-Holtzman Survey of Study Habits and Attitudes (1967); (c) General Self-Concept as measured by the McHolland and Self-Evaluation Inventory (1977); (d) Achievement Motivation as measured by the Questionnaire on Study Habits (Furst, 1966); (e) and Success Expectancy as indicated by the Expectancy scale of the Canfield-Lafferty Learning Styles Inventory (1973).

These entry characteristics were considered in relation to the student's decision to participate, or not to participate in the program, and if he/she decided to contract, the program component chosen.

The Learning Task

The learning task defined for this study was "succeeding in college" and the skill areas defined under that task were as follows: (1) skills—basic and academic, (2) procedures, (3) career and educational goals, (4) content-specific skills, (5) emotional and social development, (6) study behaviors and (7) self-management.

Programs and Instruction

The program components used in this study included: (1) systematic instruction in study skills, using the Student Oriented Learning Outline (Hammons & Jaggard, 1975); (2) personal development through the Human Potential Seminar (McHolland, 1976); and (3) academic monitoring, delivered individually through a series of student-instructor conferences.

Outcomes

Two general outcomes were selected for this study as most relevant to the goal of helping students gain the skills and attitudes necessary for academic success: (1) academic outcomes, or student learning and success as indicated by an acceptable level of *academic achievement;* and (2) affective (non-academic) outcomes, or *motivation* to continue learning as evidenced by attitudes toward the educational experience and a positive view of the self as a learner.

Procedures

In order to investigate the relationships among student characteristics, program components, and student achievement and motivation, University of Arkansas students on academic probation during the Spring Semester 1981 were compared on the basis of entry characteristics and pre-test data, participation in various components of the program outcomes and post-test data.

Participants

The total Spring 1981 undergraduate enrollment for the University of Arkansas Fayetteville campus was 11,800. Of these students, 1004 or 8.5 percent were on academic probation. The Student Development Center's orientation session for students on probation was attended by 350, or 34.9 percent, of the enrolled probation students. These 350 students made up the target population for this study. After the orientation session, students were given the opportunity to sign up for individual interviews with SDC staff members. In this interview, the student and staff member reviewed pre-test results and other information obtained at the orientation session, and the student was encouraged to contract for a credit or non-credit program designed to meet individual student needs. Whatever program format was chosen, regular contact with an assigned probation instructor was maintained throughout the term to monitor the student's academic progress and provide continuing support, a process referred to here as "academic monitoring."

Of the 350 students attending the probation orientation session, 293 (83.7 percent) chose to attend the followup interview, and 271 (92.5 percent of those interviewed) actually contracted to participate in the program.

For the purpose of comparing the specific program components in this investigation, the participant group (271 students contracting) was subdivided into the following groups for study:

PARTICIPANT GROUP 1 (SS): Systematic instruction in Study Skills in a group setting, consisting of 92 probation students enrolled in study skills classes for one credit hour.

PARTICIPANT GROUP 2 (IDS): Systematic instruction in study skills through individualized instruction, consisting of 79 students enrolled in Independent Developmental Studies for one credit hour (typically spending two hours per week in the Learning Lab).

PARTICIPANT GROUP 3 (HPS): Personal development through the Human Potential Seminar, consisting of 20 students enrolled in two HPS groups.

PARTICIPANT GROUP 4 (NC): Non-Credit independent study, consisting of 52 students who signed up to work one hour per week in the Learning Lab on an individualized program.

PARTICIPANT GROUP 5 (MC): Minimal contact contracts, consisting of 28 students who signed up for regular one-to-one monitoring through personal conferences with an assigned probation adviser. While this academic monitoring process was provided all students in the program, these 28 students received academic monitoring alone, which allowed the isolation of the monitoring process for this investigation.

In addition to the five participant sub-groups described above, a non-participant group was used for purposes of comparison with participants.

NON-PARTICIPANT GROUP (NP): This non-participant comparison group was made up of those probation students who attended the orientation session but chose not to interview (57 students) and those who interviewed but chose not to contract for the program (22 students), for a total of 79 probation students in the comparison group.

Instruments

At the probation orientation sessions the following information and assessments were obtained: a list of reasons for being in academic difficulty; questions on university procedures; the Brown-Holtzman Survey of Study Habits and Attitudes (1967); the McHolland Self-Evaluation Inventory (1977); and the Questionnaire on Study Habits (Furst, 1966). Student background information and academic data were available from a Student Information Sheet and student academic transcripts. Additional assessments assigned to participants early in the program included the Canfield-Lafferty Learning Styles Inventory (1973).

Reasons for probation

An instrument developed by the Learning Resources Unit in 1979 using the open-ended responses of probation students to the inquiry, "If you are on probation, why?" resulted in a list of twenty-eight items to be ranked from 0 = no effect to 4 = very important. An analysis of student rankings indicated that the following reasons had the most effect on their probation status in Spring 1981 (See Table 1):

"difficulty in certain courses" (Mean = 2.84)
"poor study habits" (Mean = 2.36)
"goofed off" (Mean = 2.14)
"lack of motivation" (Mean = 2.05)
"poor time management" (Mean = 2.02)

Findings

Based on the theoretical model which provided the framework for this study, data on student characteristics (input), program components (process), and student academic outcomes and motivation (outcomes) were examined in relation to twelve research questions; this section summarizes these results.

Research Question #1: Are there significant relationships among the entry characteristics of students attending the required orientation sessions?

The answer to this question was affirmative: yes, there were significant relationships among the student entry characteristics. The highest correlations were among the effective entry characteristics, such as the study habits and study attitudes ($r = .71$).

Research Question #2: Is there a significant relationship between the entry characteristics of probation students and the decision to participate in the probation program?

The answer to this question was a weak affirmative. The following entry characteristics were significantly associated with the student's decision to participate or not to participate in the probation program: sex, hours working per week, and general self-concept scores. A higher percentage of women participated, and non-participants had higher scores on general self-concept, perhaps indicating that they felt less need for the program.

Research Question #3: Is there a significant relationship between student entry characteristics and enrollment in a specific component of the probation program?

Research Question #3 was answered in the affirmative: there were significant relationships between student entry characteristics and the choice of a particular program component.

These relationships can be summarized in terms of "typical" or "average" students as follows:

1. Students who enrolled in the study skills options (either class or independent study, credit, or non-credit) had weaker academic skills as indicated by lower cumulative grade-point averages, lower study habits scores, and higher scores on Factor 1 (attributing probation to problems with academic or basic skills).

2. Students who enrolled in the Human Potential Seminar or signed up for a minimal-contact contract had problems more in the areas of personal and social development as indicated by higher grade-point averages, higher study attitudes scores, and higher scores on Factor 3 (indicating personal problems as a cause of their probationary status).

Research Question #4: Is there a significant relationship between student entry characteristics and student motivation as indicated by persistence in school and completion of the probation program?

The answers to this question are presented in two parts, relating to student persistence in school, and program completion.

(1) *Student persistence in school* (see Table 2). This part of the question was answered affirmatively: selected entry characteristics were found to be significantly associated with persistence in school.

The students who did not persist in school throughout the term (including those with semester GPAs of 0.00 who are here considered "unofficial withdrawals") may be described as typically female freshmen from one of the larger colleges (Arts and Sciences or Business Administration) who did not choose to contract for the probation program. They had cumulative GPAs below 1.00, low scores on general self-concept, and tended to attribute their probation status to personal problems (Factor 3) or some sort of crisis such as illness (Factor 7).

(2) *Program completion* (see Table 3). Several entry characteristics were also related to persistence as indicated by completing the probation program. Through discriminant analysis, almost half the students were correctly classified as either early dropouts from the program, those who had incomplete contracts, or those who completed their program contracts. The variables which contributed to this prediction were as follows: study habits scores cumulative GPA, Factor 2 (self-management), sex, race, Factor 7 (crisis), and Factor 1 (skills).

Research Question #5: Are there significant relationships between the entry characteristics and academic outcomes of students attending the orientation sessions for probation students?

This question will be discussed in two parts, relating entry characteristics to academic outcomes as measured by academic status at the end of the Spring Semester 1981, and by Spring Semester 1981 grade-point averages.

(1) *Academic status* (see Table 4). The student entry characteristics which were significantly associated with academic status at the end of the Spring Semester 1981 were: age, race, class, hours working, cumulative GPA at the end of Fall 1980, and each of the affective entry characteristics.

(2) *Semester grade-point average.* The following entry characteristics were related to Spring Semester 1981 GPA: age, college, Factor 7 (crisis), cumulative GPA at the end of Fall 1980; study habits and study attitudes scores, and self-concept scores.

To distinguish among the entry characteristics related to grade-point averages, a multiple regression analysis was used. Cumulative GPA at the end of Fall Semester 1980 was shown as the strongest single predictor of Spring Semester 1981 GPA; cumulative GPA alone accounted for around 17 percent of the total variance in Spring Semester 1981 GPA for freshmen.

Research Question #6: Is there a significant relationship between participation or non-participation in the probation program and student motivation as indicated by persistence in school?

While no statistically significant associations were found between persistence in school and a student's initial decision to participate, or not to participate, in the probation program, the following result is worth noting:

The "unofficial withdrawal" rates for students attending the orientation (6.6 percent), or contracting for the probation (5.5 percent) were lower than that for all students on probation (10 percent) (see Table 2). This may indicate that the program contributed to better information about institutional withdrawal procedures, or even intervened in the decision-making process and helped dissuade a student from leaving school.

Research Question #7: Are there significant relationships between student participation or non-participation in the probation program and academic outcomes?

The relationships between student academic outcomes, as measured by academic status at the end of the term and semester GPA, and a student's initial decision to participate, or not to participate, in the probation program were not statistically significant.

On the surface, this seems to be a negative answer to one of the more important issues in this study: does participating in the probation program relate to student academic outcomes? However, the absence of statistical significance here must be considered in the context of other findings: program *completion* was found to be significantly related to academic outcomes (Question #10). The implication of the results in Question #7, then, is that simply signing up for the program was not enough.

Research Question #8: Are there significant changes in affective measures of student motivation for students who completed the probation program?

Approximately two-thirds of the students contracting for the probation program completed their contracts. For those students, significant gains from pre-test to post-test were made on all of the following affective measures: study habits, study attitudes, general self-concept, and achievement motivation (see Table 5).

The success expectancy score was assumed to be a "self-prophecy" of academic achievement; therefore, actual semester outcomes were used instead of a post-test. However, no significant association was discovered between student expectancy of success and semester GPA.

Research Question #9: Are there significant relationships between entry characteristics and affective measures of student motivation?

Significant relationships were found between certain student entry characteristics and student motivation as indicated by gain in affective measures. These are discussed below under the three categories of entry characteristics.

Background Characteristics

Demographic data. The significant associations between demographic data and gains in affective measures indicated by this study were (1) between age and gains in study habits and achievement motivation scores (younger students made higher gains), and (2) between college of enrollment and gains in general self-concept scores (students in Arts and Sciences made lower gains).

Reasons for probation. Significant relationships were discovered between gains in affective scores and the reasons given by students for being on probation as follows:

1. Students who expressed concerns about self-management (Factor 2) showed significant gains in study habits and achievement motivation scores.
2. Students whose personal problem (Factor 3) contributed to their probation status showed significant gains in general self-concept scores.
3. Students who reported difficulties with time conflicts (Factor 5) or with a crisis (Factor 7) made significant gains in study attitudes scores.

Cognitive entry behaviors. Cumulative GPA at the end of Fall Semester 1980 was significantly related to gains in achievement motivation scores.

Affective entry characteristics. The measures used to indicate affective entry characteristics were the pre-tests of the same measures used for pre-test/post-test gains indicating student motivation as an outcome. Students who scored lowest on pre-tests tended to gain more points on the post-test, resulting in some negative correlations.

Research Question #10: Are there significant relationships between student motivation and academic outcomes?

Program completion as a behavioral indicator of motivation for learning was significantly related to student academic outcomes as measured both by academic status and Spring Semester 1981 GPA. Therefore, while the decision to participate in the probation program was *not* significantly related to academic outcomes (Question #7), *completion* of the program was.

Academic outcomes were related to gains in affective measures of motivation as follows:

1. Academic status was significantly associated with gains in self-concept scores.

2. Semester GPA was significantly correlated with gains in study habits and achievement motivation scores.

Research Question #11: Are there significant relationships between student participation in a specific program component and student motivation?

Students on minimal-contact contracts had the highest rate of persistence in school; fewer of the students who signed up for non-credit independent study completed the semester.

The relationship between program component and program completion was significant: only one-fourth of the noncredit independent study students completed their contracts; half of that group dropped out in the first month. The best completion rates were for students in the program options offering credit: study skills course (81.2 percent); independent study course (79.5 percent); Human Potential Seminar (63.2 percent).

Motivation as measured by gains in affective measures was related to program component as follows:

(1) Students in the Human Potential Seminars made significantly higher gains in general self-concept scores;

(2) Students on minimal-contact contracts made significantly lower gains in achievement motivation;

(3) Program component was not significantly related to gains in study habits or study attitudes.

Research Question #12: Are there significant relationships between student completion of a specific program component and academic outcomes?

Neither semester GPA nor academic status were significantly associated with component. However, students who signed up for the Human Potential Seminars had the highest mean semester GPA, while students in the non-credit independent study option had the lowest.

Program Components: A Summary

Since there were some significant relationships between student entry characteristics and selection of program component, the relationships between component and academic outcomes and motivation should be considered in that context. A summary of the relationships between entry characteristics and component selection will be followed by highlighting each component and its relationship to student motivation and academic outcomes.

Entry Characteristics and Component Selection

The entry characteristics most related to component selection, according to discriminant analysis, were class, race, age, academic status, all the factor scores *except* 2 (self-management), study habits, study attitudes, and self-concept scores. For freshmen, success expectancy was related to component choice, and cumulative GPA was also significant, along with the variables mentioned above.

Study Skills Classes

Students enrolled in the study skills classes had the lowest mean scores on study habits and study attitudes, and indicated that academic or basic skills (Factor 1) or having been out of school too long (Factor 8) contributed to their probation status. Over ninety percent of them completed the semester, and a higher percentage completed their contracts than any other component (83.3 percent).

Independent Studies Course

Students who enrolled in this component also indicated problems with skills (Factor 1), and tended to have low study attitudes scores. Almost ninety percent of them finished the semester, and 82.6 percent completed their contracts.

Human Potential Seminar

Students who enrolled in the Human Potential Seminars had high scores on study habits, study attitudes, and success expectancy. One-third of them indicated that personal problems contributed to their probation status (Factor 3), but one-third of them had negative scores on that factor as well. Almost ninety percent of them completed the term, and 66.7 percent completed the program. They made significantly higher gains in self-concept scores than any other component.

Non-credit Independent Study

Students enrolling for this option indicated that skills (Factor 1) contributed to their probation status, and they had low success expectancy scores. Most of them completed the term (87.8 percent), but over half dropped out of the probation program in the first month (53.5 percent). Only 10 of the 52 students originally selecting this component completed their contracts.

Minimal-Contact Contracts

Students who chose this option had higher cumulative GPAs, higher study habits and study attitudes scores, and tended to attribute their probation status to personal problems (Factor 3). They persisted in school (96 percent), but only half completed their contracts. Most of them were involved in the program throughout the term, however, with only three students in the "early dropout" category.

Conclusion

Finding the right answers is partly a matter of asking the right questions. This was a study which looked at a wide range of student characteristics, program components, and other factors relating to student motivation and academic outcomes for students on academic probation. In asking specific questions about these many relationships, it was discovered that, while initial participation in the probation program did not make a significant difference in student academic outcomes, completing the program *was* related to improved academic performance. Also, while the choice of a particular program component was not related to significant differences in academic outcomes, the very choice of program components was influenced by student background characteristics, and significant differences were found in motivational outcomes for students completing the different program components.

Hopefully, several doors have been opened by this investigation relative to the complex problems involved in the study of motivation and academic outcomes for students who have experienced academic difficulties and potential programs of assistance for them. This study should be of value in encouraging other developmental educators to investigate the various factors which contribute to college students both getting into academic trouble and recovering from such difficulties to experience academic success.

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TABLE 1
Eight Factors Based on Student Rankings of Reasons for Probation

Factor	Sample Items
Factor 1: Skills	"don't remember what I read" "problems taking exams" "study the wrong things" "poor notetaking skills" "adjustment to college—courses too difficult" "lacking basic skills in some areas"
Factor 2: Self-management	"goofed off" "poor time management" "lack of motivation"
Factor 3: Personal problems	"emotional problems" "family problems" "health problems" "financial difficulty"
Factor 4: Course-specific problems	"difficulty in certain courses" "problems with instructors" "bad advising" "adjustment to college—courses too difficult"
Factor 5: Time conflicts	"working elsewhere so many hours that it interfered with study" "no time for study for various reasons such as family, athletics, commuting, fraternity, etc."
Factor 6: Goals	"wrong major" "not sure about educational goals"
Factor 7: Specific crisis	"did not attend class" "health problems" "difficulty in certain courses" (negative correlation) "did not understand university procedures"
Factor 8: Returning students	"been out of school too long" "my high school did not prepare me for college" "financial difficulty"

TABLE 2
Changes in Status of Probation Students
During Spring Semester 1981

Changes in Status	Total Enrolled Probation Students		Probation Students Attending Orientation	
	Cases	Percent	Cases	Percent
Removed from probation during term	57	5.7	22	6.0
Changed colleges	69	6.9	26	7.4
Withdrew from school	44	4.4	11	3.1
"Unofficial withdrawal" (Semester GPA of 0.00)	103	10.3	23	6.6
No change in status during term	731	72.8	268	76.9
Total	1004	100.0	350	100.00

TABLE 3
Program Completion for Students Contracting
for the Probation Program

Program Completion	Program Participants		
	Cases	Percent	Adjusted Percent
Early Dropouts (first month)	42	17.2	17.9
Incomplete Contracts	33	13.5	14.0
Completed Contracts	160	65.6	68.1
Unknown	9	3.7	—
Total	244	100.0	100.0

TABLE 4
Academic Standing of Enrolled Probation Students at the End of Spring Semester 1981

Academic Status (End of Spring 1981 Term	Total Enrolled Probation Students			Probation Students Attending Orientation		
	Cases	Adjusted Percent	Percent	Cases	Adjusted Percent	Percent
Removed from probation during term)	57	5.7	5.8	21	6.0	6.3
Removed from probation (end of term	231	23.0	23.6	90	25.7	27.1
Continued on probation	290	28.9	29.6	113	32.3	34.0
Suspended	368	36.7	37.6	105	30.0	31.6
Dismissed	33	3.3	3.4	2	0.6	0.6
Unknown	25	2.5	—	18	5.1	—
Total	1004	100.0	100.0	350	100.0	100.0

TABLE 5

Gains in Affective Scores for Students Completing the Probation Program

Affective Scores	Cases	Mean	SD	Difference	r	SD	Test of Significance
Study Habits							
Pre-test	150	37.6	17.0	12.7	0.63	14.7	$t=20.58$*
Post-test		50.3	18.6				
Study Attitudes							
Pre-test	146	48.8	17.6	7.7	0.56	15.9	$t=5.96$*
Post-test		56.5	17.4				
Self Concept							
Pre-test	143	56.9	11.7	5.0	0.46	9.9	$t=6.03$*
Post-test		62.0	12.6				
Achievement Motivation							
Pre-test	146	24.2	4.7	2.6	0.06 $P=0.24$	4.5	$t=7.12$*
Post-test		26.8	4.7				

*Significant at the 0.001 level.

DIAGNOSING READING AND REASONING PROBLEMS OF HIGH ACHIEVING ADULTS

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Nothing in our training or practice as reading specialists prepares us to diagnose the reading problems of high achieving students. These talented students give evidence, repeatedly, of having their academic acts together. They score well on standardized tests. They are the ones who make our schools look good on Iowa Tests of Basic Skills. Their grade averages and ACT or SAT scores give them their pick of top colleges. Their scores on professional school qualifying examinations assure easy entry into the platinum professions of medicine, dentistry, and law.

What do we do, then, when they fail, as many do, on advanced qualifying examinations? The bar exam, for instance? Or, in the case of medical and dental students, on Part I of the examination covering the basic sciences? Many schools require passing scores for promotion into the last two, the clinical years, of medical school. Others require passing scores for graduation. These tests are scored such that all students scoring 1.2 standard deviations below the mean, about 10% of those who take the test for the first time, fail. Conventional wisdom, as reflected in responses students receive from medical school faculty, tells the students to re-take the examination. "After all," the typical response goes, "anyone is entitled to have a bad day. Take a couple of months to prepare and try again." Family and friends offer much the same: "If a horse throws you, get right up and get back on."

How does conventional wisdom respond to a second failure? "You must study harder." "Perhaps you should repeat basic science courses in your weakest areas." "Perhaps you should enroll in a commercial review course."

A third failure? "Clearly, either you did not study enough or our selection mechanism broke down and we admitted you mistakenly. Perhaps you should consider engineering."

In some schools, the third failure results in automatic expulsion from the program, regardless of faculty evaluations, prior record of achievement, or mitigating circumstances. If the student is enrolled in a school which will permit a fourth attempt, the last allowed by the National Board, the recommendation will likely be that the student, "take a year off and review everything."

How do we diagnose problems in these instances?

Diagnosis, we know from working with elementary and high school students, is largely a matter of gathering data on a variety of standardized assessments, interpreting those data, verifying hypotheses through observation, and recommending or implementing specific instructional protocols. We are right more often than we are wrong, and, by and large, we are effective in helping students to make moderate, and occasionally, spectacular gains. But is the same approach appropriate for the achieving adult student?

One of the assumptions on which we base our diagnoses of children is that they cannot help us much with diagnosis. They are not very analytical. So we test for physical problems, perceptual problems, and basic traits like IQ. With a youngster, we are likely to look at such basic skills as inference and word attack. Faced with the problem of an unsuccessful adult learner, we are likely to prescribe the same kind of assessment: IQ, locus of control, personality type, anxiety assessment, study skills, learning styles, and divergent/convergent thinking strategies.

With adults, these kinds of measures may not be helpful for two reasons. First, the adults are often able to tell us what is happening. When a student walks in and says, "I have trouble concentrating. I plan an all-day study schedule, and if I get started half an hour late, I say, 'It is ruined.' Then I do something else and plan another schedule for the next day. When I do study, I focus on one or two minor points to the exclusion of the huge mass of material I need to cover." The twenty-question inventory of test anxiety is neither helpful nor necessary with this student at this time. He has just told us that he has nearly every known symptom of anxiety, and we surely do not need the twenty questions to verify our diagnosis.

The second reason is that adults' problems are more likely to be situation specific. The adult student can read, but he has trouble with the biology text. He can write, but he does very poorly in history exams. He can solve math problems at home, but he blows them in the exam. Or, in the case of the medical student, he has good grades and achievement marks in all the basic sciences but fails Part I of the Boards.

The Problem

In 1981, for the first time, we were faced with four students who had previously failed medical boards three times. Eight weeks remained before the next administration of the examination. We realized quickly that time did not permit a traditional approach to the problem. The time constraint would permit some content review, if we could identify specific content weaknesses. It would also permit some behavior modification, if we could identify the behavior to modify. Thus, we became instant behaviorists, addressing the question, "What behavior impedes student success on Part I of the National Medical Board Examination?" The second, implied questions, asked whether, if and when we identified such behavior, we could extinguish the nonproductive negative behavior and, through modeling and behavior modification, replace it with behavior designed to produce successful performance on the examination.

The Diagnostic Plan

The plan was simple enough. First, we would ask the students what problems they thought they were having. Then we would test their hypotheses with a mock administration of board-type questions. The mock board examination would give us the data to confirm or refute the students' hypotheses. At the time, we did not know enough about the entire subject to have any hypotheses of our own to test. Subsequently we developed some, and we integrated them when we worked with other students.

The first four students passed their exams. Since that time, we have used the same diagnostic plan, in one form or another, with twenty achieving adults. Four have been practicing physicians, residents in the University teaching hospital who scored poorly on their annual in-training examinations. Two have been physicians who had completed their residencies, but had failed to pass their specialty boards.

Interpretation

Janet

The data table summary of Janet's test results is given in Appendix 1. Although the full interpretation is too extensive for reproduction in these pages, the following observations are illustrative.

1. Indications of impulsivity
   a. Correlation data indicate that longer questions are less likely to be answered correctly than shorter questions (correlation of −0.14 between length and correctness).
   b. The greater time spent on a question, the more likely correct (+0.05). Typically, this statistic produces a negative correlation, indicating that students spend more time on questions which they find difficult and, hence, they are more likely to answer incorrectly.
   c. The mean time spent per question was 23 seconds; the examination permits 45 seconds.

These data are strongly suggestive of impulsivity, which is a learned response to an anxiety-producing situation. In this examination, impulsivity is a profound handicap, and the student must learn either to reduce anxiety in this situation or to respond to it more productively.

2. Indications of premature closure

   a. The low frequency of correct second answers (22% vs. 25% probability with random choices) was taken to indicate that once the student had finished answering the question, she had little inclination to reconsider the answer.
   b. The "correct by confidence" table revealed the anomaly of high percentage correct in the category of answers in which Janet had the least confidence (71%), a rate nearly as high as in the category of greatest confidence (78%), with little variation between category 3 (49%) and category 4 (50%). These data were taken to indicate either that the student's capacity for realistic appraisal of her own work was impaired or that once she had answered the question, she had not the power to reconsider it.

These data are strongly suggestive of premature closure on a question, which is a learned response to an anxiety producing situation, much like the response noted above relative to impulsivity.

3. Indications of greater knowledge base than indicated on the examination.
   a. The percent correct in the behavioral sciences subset of scores (47%) was not substantially different from the student's scores in five of the other subject subsets. In view of the student's undergraduate major in psychology with a 3.5 grade point average and in view of the heavy psychology loading of these questions (about 80%), it is assumed that the student's knowledge in this field is extensive. The parity of this score with scores in areas of more tenuous mastery strongly suggest that the student's basic knowledge may be substantially greater than the exam score indicates.

Although other diagnostic inferences were drawn from the data, the foregoing are representative.

Martha

The transcribed segment of Martha's interview (Appendix B) reveals a specific weakness which a more generalized measure either would not reveal or would reveal only obliquely. The correct answer (A) requires the student to recognize that although these behaviors correlate with socioeconomic status, they are probably functions of education. Clearly, although Martha has the knowledge necessary to answer the question, she does not perceive the need to relate to educational level. Even earlier in the dialog, Martha identified her problem: "I'm stereotyping." In fact, stereotyping has emerged as a problem among a number of students who have been diagnosed in this manner. Stereotyping in this sense represents a real trap, as students respond based on a combination of their own limited experience (as Martha did) or upon "conventional wisdom" which comes from their early training. The student can be successful in answering this kind of question only if she notes: (1) that the question asks about child rearing practices, and (2) that child rearing in our culture is a function of education. The student can learn quite easily to respond to questions in a more effective manner. Martha *did* learn, and was successful in her next examination.

John

John's problem was somewhat different from Martha's. He relied on personal experience to the extent that he permitted experience *to override* the data hypothesized in the question.

Specifically the question (see Appendix C) asserts that the patient has had tetanus toxoid on two prior occasions. Thus, the appropriate response is to administer tetanus toxoid, which has the effect of increasing the body's production of immune globulin. Absent prior administration of tetanus toxoid, the body's response will be slow, and administration of immune globulin is appropriate.

In John's response, relying on his experience in the hospital emergency room, he indicated that he could not trust patients who told him they had received prior immunization with tetanus toxoid, and thus would administer globulin. Clinicians who have reviewed John's answer agree that in practice, the situation most often occurs as John described it, and thus his response is clinically correct. In the context of the question, however, prior administration of tetanus toxoid is given as hard data, not as self-reported by the patient, and thus John's response is incorrect.

In discussion with John, the specialist pointed out that John's response was analogous to that of the child who, when asked, "If grass were purple, what color would a lawn be?" responded, "Lawns are green." With the question repeated, the child responded, "Grass is not purple. Grass is green." In the analogous situation, the child has not developed the ability to deal with hypothetical situations. In John's case, he has the ability to conceptualize hypothetical situations, but rejects the hypothesis.

In the case of John, as in the case of Martha, the problem had caused consistent problems. Correction was easily accomplished, and John passed at the next administration of the examination.

The foregoing are not meant to imply that the problems noted were the only ones that John and Martha were having. They are illustrative only.

Conclusions and Discussion

In the cases referred to, although the problems of the students were more generalized than the references may indicate, the problems manifested themselves in very specific situations. The anxiety which affected Janet's performance was quite situation specific. Martha's reliance on stereotypes, although a potential problem in other situations, was debilitating only in this one. John's problem, also, was situation specific. Thus, traditional diagnostic procedures would not have been helpful in identifying and correcting the problems. In these instances, close observation of students in the specific failure situation provided the insight necessary to prescribe a modification program designed to address specific problems.

Specialists, faced with adult students who have failed course examinations, typically begin with, "Show me your lecture notes." This usual approach focuses on the student's preparation for the examination. Although this approach may be effective in dealing with the student's problem *in the long run*, it may not produce the immediate results which will help the student to cope with the immediate problem. Analysis of situation-specific *performance*, on the other hand, may be effective in dealing with the immediate problem. It may thus be an appropriate first step in the analysis of the problem of the adult student.

APPENDIX A

Janet

First choice correct	48%
Second choice correct (first incorrect)	22%
Correlations	
correct by length	–0.14%
correct by technical vocabulary	+0.05%
correct by time	+0.05%

Tables	First Choice				Second Choice	
	Correct		Incorrect		Correct	
	N	%	N	%	N	%
Statistics	4	25	12	75	3	25
Graphics	1	13	7	88	2	29
Probability	14	52	13	48	4	31
Cause-Effect	49	51	48	49	11	23
Diagnosis	9	60	6	40	0	–0–
Definitions	9	35	17	65	5	30
Confidence Level						
1 (Low)	5	71	2	29	1	50
2	16	31	36	69	8	22
3	19	49	20	51	4	20
4	9	50	9	50	3	33
5	18	78	5	22	0	–0–
Question Type						
Multiple choice	22	43	29	57	11	38
Multiple choice, negative	4	80	1	20	0	–0–
K-type (multiple correct)	28	47	32	53	5	16
Matching	8	57	6	43	0	–0–
A/B/Both/Neither	5	50	5	50	0	–0–

APPENDIX A (cont'd)

Tables	First Choice				Second Choice	
	Correct		Incorrect		Correct	
	N	%	N	%	N	%
Subject						
Anatomy	4	40	6	60	2	33
Behavioral Science	7	47	8	53	1	13
Biochemistry	11	48	12	52	3	25
Microbiology	7	47	8	53	0	-0-
Pathology	12	55	10	45	2	20
Pharmacology	11	69	5	31	1	20
Physiology	15	38	24	62	7	29

APPENDIX B

Martha

Test Question

A	B	C	D	E
1, 2, 3 only	1, 3 only	2, 4 only	4 only	all are correct

Studies of contemporary child-rearing practices in the USA show that lower socioeconomic class infants and children, when compared with those from the middle and upper classes, experience:

1. earlier sex-typing of behavior
2. less parental supervision
3. less permissive upbringing
4. physical disciplinary punishment

M. Oh, I like these. I would say that! What did I say? C?

B. You were totally confident of C.

M. I was? Just from what I think, I would say that those in a lower socioeconomic class would receive less parental supervision, just because of what I've seen at Truman (Truman Hospital, the University teaching hospital).

B. Any other reason? How many middle and upper class children have you observed at Truman?

M. Not at Truman, but at other places. I would say that the reason is that in lower socioeconomic families the mother and father are both working or neither of them is working, but they are not as concerned about parental supervision. I am almost positive that 2 is true. But, if 2 is true, then 4 has to be true. That's what I relied on. So then I came back to 1 and I thought—to me that would occur more in middle and upper class families because of kind of a need to succeed or whatever and so there would be earlier—"You are a boy and you do this; you are a girl and you'll do that." It didn't seem like that would happen so much in lower socioeconomic. For one thing, because of less parental supervision. That's why I went with C, which is 2 and 4. I would probably say that since you chose this one to ask me about, and I was very confident, then I must have been wrong.

B. What might be wrong with it? Tell me about 4. You haven't talked about it yet.

M. I just think they would get more physical disciplinary punishment because I feel—I'm stereotyping—but we see so much of this, especially at Truman, and hear about it as far as child abuse that a lot occurs in lower socioeconomic classes.

B. You said *more* physical disciplinary punishment. Does it say *more?*

M. I would still say that they tend to receive physical punishment whereas an upper or middle would be more verbal punishment.

B. Child abuse is more a characteristic of lower socioeconomic classes?

M. I would say that would be true.

B. What else correlates with socioeconomic class? Apart from the treatment of children?

M. Unemployment, number of children in a family, disease, education.

B. Would early sex typing go along with more or with less education?

M. Less. I'm contradicting what I just said.

B. Tell me what you would think of A as a choice.

M. The reason I have a problem with that is that if they are having less parental supervision, then how could they be having less permissive upbringing? See what I'm saying? I think that's what I thought when I read through the question. I felt like one of these two had to be true because if it was less parental supervision then they would have more permissive upbringing.

B. You interpret 2 and 3 as being contradictory?

M. Yes.

B. You are interpreting permissiveness as having to do with the degree of supervision?

M. Exactly.

B. What about permissiveness as a concept in raising children? Some schools are classified as permissive, others as very structured. Permissive in the sense of allowing children a lot of freedom to make choices. If you interpret permissive in that way, would it contradict?

M. No, it wouldn't. Middle class and more educated people tend to allow their children greater freedom of choice. That's what I would think.

APPENDIX C

John

Test Question

A	B	C	D	E
1, 2, 3 only	1, 3 only	2, 4 only	4 only	all are correct

A 28-year old emergency room patient has an infected leg wound. The patient had tetanus toxoid at age four and again eight years later. Which among the following medications are appropriate?

1. Tetanus toxoid
2. Tetanus antitoxin
3. (irrelevant)
4. Immunoglobulin

B. What took you so long with this question?

J. First, you had to decide how bad off you thought the person was from the description they gave you. As to what kind of things you wanted to do. I knew that 1 was an obvious answer. You automatically do 1.

B. She's 28.

J. She's 28. She got a booster eight years ago.

B. Eight years later, after the one at age four.

J. Yeah.

B. That would be sixteen years ago.

J. Right. And so I know that 1 is right. I would definitely do 1. So 3 is right, from the question. Automatically. Then, you have to decide whether you want to give the immunoglobulin very often, but in her case, when she hasn't had an immunization in ten years and she shows signs of having other symptoms, I decided I would go ahead and give her the immunoglobulin, and that meant I was going to give her the antitoxin, too, I guess. (*Note:* electing 4 requires also electing 2.) I'd give her all of them.

B. The answer sheet indicates that 1, 2, and 3 are correct.

J. Well, that's a real iffy thing. You don't give this thing (*immunoglobulin*) very often. It's usually a judgment call, whether you want to give it or not.

B. Would they not give the immunoglobulin because she has had the toxoid?

J. Yeah, that's one of the reasons. The question of giving the immunoglobulin is that they said that she has been immunized at age four, so she's been immunized once. Usually a person will say, "Oh, I've never had a tetanus shot or anything." Some people will give it if they feel real uncomfortable with that fact, you know. They think, "Well, that's been a long time ago and I haven't had any booster shot . . ." The thing is that, "Well, I don't know if I've ever had a tetanus shot." But once you can't get an answer and you've got to give them something, because you can't let them out of there unless you think they haven't got it and so, therefore, you start thinking about this instead of just the toxoid. But also you have to remember that in her case, she's been bitten by an animal, a big . . . no, it didn't say that, did it? An infected leg wound. So you know that she has a real active sign for something to develop, plus she's got symptoms. That means she could be developing tetanus. I mean, it's not the same as if somebody walked in and said, "I just stabbed myself with an ice pick and I feel great." So . . .

B. So you are going to give her all the shots.

J. Right.

Note: Tetanus toxoid is given to stimulate the body's immune response. If a person has received toxoid previously, the body will quickly produce its own immunoglobulin. If the person has not previously received toxoid, the body will be slow to develop immunoglobulin; thus in the latter instance administration of immunoglobulin is appropriate.

ESTABLISHING AN ENVIRONMENT FOR PROBLEM SOLVING

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One of the known "keys" to attracting and maintaining student involvement in reading in the content areas is making the material accessible and almost immediately applicable to the student's daily life. Certainly the primary school technique of language experience charts has proven that integration, even on the most basic level, can sustain language acquisition. It incorporates the three vocabularies: listening, speaking, and reading. Thus, integration facilitates the acquisition of new vocabulary words. It is the same process that allows for another technique to be an equally potent tool. That technique is the use of problem solving.

A brief survey of the history of problem solving would indicate that although the many theorists have various explanations of the phenomenon according to their particular orientation, there are four distinct stages in problem solving that are readily discernable. They can be later incorporated into a lesson plan or reading approach. One of the most concise and useful of the explanations is the Wallas (1926) model. The four steps are hierarchical in nature and developmental in that they provide a framework for extension activities as will be discussed later.

The first stage is *preparation*. It serves as a foundation for building a supportive learning environment that will allow for creativity and problem solving. It may be viewed in terms of internal and external readiness. Externally, the environment must be one that allows for access of information. This, of course, means that there is a facilitator to direct the adult towards a tangible source such as the library, but it also means that the environment is one that fosters growth by removing the obstacles. If, as Osborn (1953) suggested, fluency is a boon to problem solving, then external feedback may serve as a retardant as it will stifle the incubation of ideas as "qualifiers" of good or bad are placed upon possible suggestions. In another case, if people in the environment offer criticism, it may be viewed as pointing the adult toward a situation of "right" or "wrong" answers. Again, the idea is to generate as many possibilities and allow for the judgmental process to be put in abeyance.

Also part of the initial stage is reducing the amount of self-talk that inhibits. The adult is viewed as being in a position of androgogy (Knowles, 1978) and is deemed fully competent and able. Risk-taking is decreased when there is a fear of criticism or reproval for a wrong answer. The first stage, in summary, is one of removing limitations and boundaries from the physical and perceived environment. These factors feed into the next stage.

Incubation may be viewed as a continuation of *preparation*. Technically, Wallas intended it to be a formulation of hypotheses. Both Knowles (1978) and Kidd (1973) propose that in order to do this, one must understand the necessary difference between divergent/convergent or line/point thinking. The basic strategy for problem solving is to allow for many paths to solve the problem rather than reliance on just one method. A point is limiting in that it is unidimensional. A line is a two-dimensional configuration made up of a series of points. Education in America has trained many non-thinkers to come up with the one correct answer that will satisfy the instructor and perhaps make test marking easier. We have sacrificed originality and creativity in the process and have instilled the notion that there is only one acceptable way to solve a problem. Through free association many ideas are to surface, but this cannot happen if the adult is going to search for the one acceptable answer.

The notion of free association is dependent upon memory. Although the literature varies on its responses to this matter, there are two major strands of thought: (1) there is a natural physical decaying of the memory cells, but (2) an adult's capacity to use memory can be facilitated by mneumonic devices. Loftus (1980) and Mayer (1981) review the differences between the sensory, short-term, and long-term memories, but also suggest a rather new dimension called the working memory. It appears to be a construct that is closely tied to the short-term and also has a limited capacity. Mayer uses the analogy of "a scratch pad on which you perform conscious mental operations such as mental arithmetic" (1981, p. 24). The adult learner has little problem with this working memory in formulating hypotheses during this stage.

It is the application of this solution, the product of working memory, that is the function of Wallas' third stage, *illumination*. The "Eureka" or "aha!" is the element of surprise that Bruner (1977) wrote of and is the result of reality-testing. The question is one of defining whose reality it is and if there is only one reality. Thus problem solving for the adult may be seen as applying a particular solution to one circumstance and another solution to a different event; the problem may be the same, but the experience and perception may be different.

The testing of solutions and reality cannot be considered complete unless some *feedback* is offered so that further definition of reality or the problem can be made. As with the scientific model, the end of the problem solving task is not only with the solution of the immediate problem, but with the development of future questions to be considered.

A Working Model of the Paradigm

The basis for the article "Structuring An Adult Learning Environment" has been the implementation of curriculum in the course PSY 100: Critical Readings in Psychology offered at Mercy College in Westchester County and the Bronx in New York. In inviting the adult to return to education after an absence, Mercy has recognized the varied needs and concerns of the adult learner. This course purports to work with the improvement of reading, study, and vocabulary skills while introducing the student to the content of the field of psychology. What it does is much more: it encourages thinking and problem solving using a commonality shared by all adults and younger students. It asks the learner to be a bit introspective and to share her/his human experiences.

The method is simple. A "case" is presented before the class that involves a problem or conflict to be resolved. The problem may span many issues and controversies, but is usually one the learner can relate to. This is done as a verbal "class motivator" and is effective in aiding the student to identify the main idea and topic to be worked with. Automatically students note when discussion is heading towards a tangent. As supporting ideas and pieces of information are given, they are noted as such. After a "warm-up," an article is read in the class text "Annual Editions in Psychology 1983/1984." (Dushkin: Sluice Dock, Guilford, Conn.)

One experiment was conducted to determine if the student was able to determine when a problem truly existed as opposed to when the reader was subjectively reacting to a situation. Fifty students were shown photographs depicting routine campus life and were asked to declare whether or not a problem existed. The group that consisted of twenty-five male and female members who received the independent variable of the above sensitivity training were significantly more adept at identifying problem situations (F = 4.22 significant at .05 level).

After the reading, fact is separated from opinion. The reading is followed by a written summary that expresses the author's opinion as well as the student's opinion. New vocabulary is reviewed and learned. The original case problem is re-inspected for new alternative ways of coping or solving the problem in light of the new information from the articles. New cases are generated by the adult either from common experiences or by building in new obstacles into the original case. Again, the solution's application must be generalizable to other situations.

Two other experiments were performed to see the effects of this teaching on the thinking processes of the student. In one experiment pre- and post-tests with the *Torrance Tests of Creative Thinking* (Figural Test Booklet B, 1974) showed significant difference in creativity and approach to problems for the experimental group. There was little difference in whole-to-part approach to problem solving when both control and experimental groups were asked to perform with the WAIS Block Assembly subtest.

In another experiment, an education class, Critical Reading and Analytic Techniques, taught vocabulary to a class of students not enrolled currently in PSY 100. The same vocabulary list was used in the psychology course, but was allowed the integrative process rather than a structural analysis approach to vocabulary learning. No significant differences were found between the groups' improved scores. This was interpreted as both methods of vocabulary learning being effective. The groups may be further described as being freshmen of varied ages who were non-traditionally admitted to the college and classified as weak in vocabulary skills via the California Achievement Test (Form 19D).

As with the other aspects of the Adult Learning Environment as described by Frankel and Lindsey (1981) and Frankel (1981, 1982), the successful environment is one that allows for transfer of information across the curriculum. These same stages of developing strategies for problem solving are the core of other developmental courses in philosophy and mathematics. The Basic Computations class, MATH 100, assists the adult by looking at solving word problems in a similar logical progression of thought: defining the problem, isolating the variables, seeing how they can be manipulated, and applying a formula.

As with any of the experiments done with college students, it is hard to determine if one innovative style of teaching has larger, transferable effects. There is an experimental problem with saying that only one variable was in effect; students are in many classes and are affected by many instructors. Yet, it is clear that the ideas and processes of the PSY 100 class that involve problem solving as a technique for learning have a long range effect in enabling the student to develop more fully.

Future Research

If this paper is to be true to its dictates, it, too, must generate ideas for future investigation. The author is currently working on a study that applies the strategies of problem solving to a task to see subject preference when that subject is a member of a defined population. The hypothesis is that members of certain populations demonstrate preference for particular strategies. An extension of this notion is the call for a precise definition of "street savvy" and research on methods of problem solving used by this population.

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EXPLORING NEW FRONTIERS IN CONTENT AREA VOCABULARY

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Appropriate to the Computer Age is the programming of the human computer. The key to human computer programming is the utilization of total sensory input, the multi-sensory approach. Following is a description of the multi-sensory approach to vocabulary development and an explanation of how it is applied.

Richard came to my office all excited about the "gimmice," as he called it, about which his roommate was so enthused. He had a botany test coming up at two o'clock and had to learn 50 botanical terms. Could this "gimmice" help him, and where should he start? I explained that the procedure was no "gimmice," but rather it was just dedicated work and use of one's own senses.

So with the multi-sensory technique, Richard went to work at the chalkboard internalizing those botanical terms. Later, when asked why he succeeded with only 43 words, his reply was that he lacked time to program the last seven words, the seven words he missed in the test.

The Multi-Sensory Approach

In this Computer Age, we neglect the most useful computer available, the human brain. Just as other computers are programmable as an input retrieval system, so is the brain. Memorization is one method of an input storage retrieval system. In addition to the various memory techniques, the multi-sensory technique utilizes the senses of sight, sound, speech, and touch as a means of input or programming into the brain.

The multi-sensory approach to learning is not new. The tactile method of word concept relationship opened the world to Helen Keller (1920). The Keller-Fernald method has long been used in the education of the handicapped (Fernald, 1943; Bond & Tinker, 1967; Roswell & Natcheg, 1964) and more recently in the regular classroom. It has been observed that students who do well in school tend to be those who learn either by the auditory or the visual mode. Erroneous conclusions have been made from such observations that other students are slower learners, when in fact the cause is that most teachers employ auditory and visual methods of teaching. Research has found that many students who do not do well in school are tactile-kinesthetic learners, those who learn through the sense of touch and body movements. Their strongest perceptual strengths are not auditory or visual, yet they can succeed through their own unique learning mode (Dunn & Dunn, 1978). One of the challenges in today's education is to identify a student's preferred sensory mode for learning and then meet the instructional needs of that modality. It is upon this challenge that the multi-sensory technique of vocabulary development was introduced into the reading curriculum.

Procedure for the Multi-Sensory Approach

In the multi-sensory approach to content area vocabulary, it is essential to understand the concept and know the meaning of the term before internalizing or programming the term into the brain. For example scientific terms are either related to processes or identify structure, classifications, or labels. Through association and visualization of the process, structure, or classification, a student can relate the term to the concept and give it meaning. The use of graphics helps to clarify meaning and stimulates eidetic or mental imagery for recall purposes. Figure 1 gives an example of a graphic showing

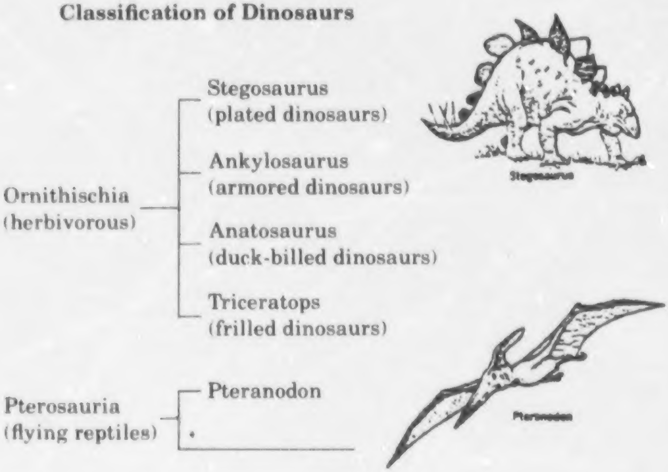
Classification of Dinosaurs
Ornithischia (herbivorous)
Stegosaurus (plated dinosaurs)
Ankylosaurus (armored dinosaurs)
Anatosaurus (duck-billed dinosaurs)
Triceratops (frilled dinosaurs)
Pterosauria (flying reptiles)
Pteranodon
Stegosaurus
Pteranodon

Figure 1
Example of a student constructed graphic which identifies meaning preliminary to the multi-sensory approach.

the classifications of dinosaurs and containing the related technical terms with which a student must be familiar. As students extract the information from the text and organize it into a chart or other type of graphic, they are clarifying meaning in their own minds. Only after they have established meaning are they ready to internalize the terms through the multi-sensory approach.

The technical term is first written and spelled correctly on the chalkboard. Like the memory input, the multi-sensory input which can be retrieved will be only as accurate as the initial input. A pronounciation is aided by division of a word into syllables. This is done by identifying the vowels or vowel digraphs, which will help to identify the syllables. Through the principle of discovery, and with teacher guidance, students soon become aware of consonant-vowel patterns. Because the long and short vowel sounds as related to consonant-vowel patterns are only generalizations, students are cautioned about too much generalizing. Nevertheless, the identification of the vowels and vowel digraphs helps the student to identify the syllables in the word.

The tactile-kinesthetic modality is used by the students to trace the word as they pronounce each syllable aloud. As they do so they are using their sense of touch, as well as their auditory, visual, and speech senses; thus the term, multi-sensory approach. By tracing and saying the word aloud, the students are forming an eidetic image of the word in their mind. It is this eidetic image that will be used as an aid in the recall of the word. While some students are able to accurately program a word after only four repetitions of tracing and saying, most students benefit from repeating the tracing and saying step six times before the self-test.

The self-test involves reproducing the word without reference to the model. The self-test consists of reproducing the word three times without error, each time without reference to the model and each time pronouncing the word aloud. If students make errors, it is imperative that they erase the entire word and write a new program of the word. The objective is to program only the correct spelling of the words. To reinforce an understanding of the word, it should be used in context in which the concept is explained or the meaning of the word is given.

This technique has been used in college reading classes for more than a decade during which the author has conducted extensive research. Students come to the task with varying degrees of eidetic imagery skill, thus there is a difference in time required for programming words. The more complex the term, the clearer the eidetic image becomes and easier to recall the word. Like any other skill, proficiency in this technique is increased with practice.

Application of the Multi-Sensory Approach

Using Figure 1 as an example of the application of the multi-sensory approach to content area vocabulary, the term *ornithischia* is written on the chalkboard. *Ornithischia* is a major classification of herbivorous dinosaurs. Its relationship to its subgroups can be recognized in the chart of Figure 1. After the term is well understood, students are ready to program the word into their mental computers. The vowels and vowel digraphs are identified, indicating five syllables: *ȯrnithischiȧ*. The syllabication of the word is thus: *or ni this chi a*. The next step is to analyze the phonetic pattern of each syllable to determine the consonant-vowel relationships. In this example, because the *i* within a word is generally a short vowel, the pronunciation of the word would be: *ôr nĭ this chĭ* $\overset{ə}{a}$.

After tracing and saying the word from four to six times, pronouncing each syllable as the finger traces over it, students are ready for the self-test. To be assured that the word has been correctly programmed, the word *ornithischia* must be written while saying the word aloud three times without error and without any reference to the model. The same procedure is repeated for each of the technical terms to be programmed.

Summary

While the multi-sensory approach may seem to be slow and laborious at first, the success rate for learning difficult content area vocabulary compensates for the time and effort involved. This approach is useful also in general vocabulary building and remembering difficult names. In the word, *surreptitiously* for example, the meaning of the word would first be determined: *to act without proper authority* or *to take clandestine action*.

Step 1: Write the word on the chalkboard: *surreptitiously*

Step 2: Identify the vowels and vowel digraphs: *su̇rrėptitiȯuslẏ*

Step 3: Divide the word into syllables. The number of vowel sounds, (vowels and vowel digraphs) indicates the number of syllables (five): *sur rep ti tious ly*

Step 4: Analyze the phonetic pattern of each syllable to determine the consonant-vowel relationship as an aid in the pronunciation: *sur rep ti tious ly*

Step 5: Trace the word with the index finger, saying each syllable aloud while tracing that syllable. Repeat this step six times, more or less depending upon the individual needs of the student. It is helpful at this stage to close one's eyes to get a clear mental image of the word. The more emphasis that is placed on this eidetic imagery development, the clearer will be the focus on the word.

Step 6: Erase the chalkboard to eliminate any reference to the model. Reproduce the word, saying each syllable as it is written. Check the word with the model for accuracy. If the reproduction contains any error, do not correct the error, but erase the word completely and rewrite the word without error. If necessary, repeat Step 5 until the word can be reproduced three times without error.

Step 7: Use the word in context, showing an understanding of the meaning. To reinforce learning, it is well to review the word, repeating steps 6 and 7 for three consecutive days. It has been found that in most cases, terms which have been programmed through this approach have remained with students long after their need for them.

Although the multi-sensory approach has been found to be an effective method of learning technical and content area vocabulary, it is still primarily the reading or study skills teacher who faces the responsibility for that vocabulary development. The challenge then is to involve content area instructors in content area vocabulary building. The multi-sensory technique is one approach that will make their task easier and more effective.

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ADJUNCT CLASSES: TEACHING COLLEGE STUDENTS STRATEGIES FOR LEARNING FROM TEXTS

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Although each year our college campuses are filled with eager students who expect to succeed, many of these individuals come to us only marginally prepared for success at the college level. To succeed in higher education, the learner must be able to acquire and process enormous quantities of information effectively. Our reading adjunct classes are designed to facilitate students' ability to process effectively information through implementation of three major objectives.

Objectives

First, we strive to aid students in developing *metacognition* or *active control* over their own learning. Recent advances in educational and cognitive psychology have suggested that learners must become active information processors, interpreters, and synthesizers (Linden & Wittrock, 1981; Wittrock, 1974; 1978). That is, students must acquire active control processes for organizing and monitoring learning, memory, and information retrieval. Weinstein (1982, Winter) suggests three types of competencies which are necessary in a metacurriculum: information processing, active study, and self-management.

Acquisition of these competencies necessitates learning some specific strategies for learning from texts since textbook reading is a major method of acquiring information in college. Hence, our second objective is to aid students in learning a variety of *strategies for learning from texts*. Once these strategies have been learned and evaluated, students are capable of monitoring their own learning by choosing the most appropriate strategies for a particular situation, deciding how to participate actively in the dialogue between reader and writer, and structuring information acquired through these processes for appropriate retrieval. When students can do this, they have acquired control over their own learning processes.

In addition to learning new strategies and acquiring control over their learning processes, students must acquire levels of specific *subject knowledge* sufficient to support further learning (Ford, 1981, Fall). Often students also need more tangible rewards for expending time and energy. Thus, the third objective of our adjunct classes is to aid students in comprehending the information from a specific course more fully which will, in turn, facilitate acquisition of further learning and help them to earn higher grades in a course. When students are able to get some immediate results from using new strategies, they are motivated to continue seeking new and better ways of acquiring and processing information.

Adjunct Courses

Adjunct courses are classes in which we teach content area learning strategies in conjunction with the normal work assignment of a regular course. Students who participate in this learning situation enroll in two courses: the regular four-hour per week content area course and an additional two-hour per week adjunct course. The content area instructor teaches the regular portion of the class and the adjunct course instructor teaches students strategies for learning to learn and helps students integrate these learning strategies into the regular course content.

Presently, we offer adjunct classes* for three courses: American Civilization, Informal Logic, and Basic Literature Survey courses. In each adjunct course, we teach a variety of learning-to-learn strategies because (1) different students process information in different ways and (2) some strategies seem more appropriate for a particular type of information. Some learning-to-learn strategies are common to all three adjuncts because they facilitate comprehension, retention, and retrieval of information across disciplines.

Common Strategies

Strategies common to all adjuncts aid students in processing incoming information from two sources: textbooks and lectures. Textbook strategies include learning to use textbook aids, to annotate and underline texts and to recognize organizational patterns in expository text.

Learning to use textbook aids means that students use the various components of the text such as the table of contents and index to glean general information about the textbook organization and content. In addition, students are taught to use the chapter outlines, topic headings, boldface type and other specialized type to gain a general sense of what the author's message will be. We then guide students in the construction of advance organizers (Ausubel, 1960) which, in turn, aids them in anticipating information forthcoming in a passage.

In addition to anticipating what the author will say, students must learn to recognize specific ideas and facts contained in the passage. Annotating and underlining texts is one method of monitoring recognition of main ideas and supporting details. Students are taught strategies for locating important function, marking and annotating texts, checking and evaluating their own marking techniques. Checking and evaluating marking techniques is a critical step because students need to develop the metacognitive capabilities necessary for utilization of these strategies when reading texts are not used in the adjunct class.

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*Through the Student Assistance in Learning (S.A.I.L.) Program, a federally funded program for Special Services for Disadvantaged Students (SDSS)

Although students must comprehend the general outline, main ideas and supporting details in written discourse, they are also required to recall information read previously. Since long-term memories consist of organized systems of information (McKoon, 1977), recognizing and arranging information in meaningful classifications is an effective learning strategy (Moore, 1982). One method of classifying written information is through organization of ideas presented in the text. We teach students to recognize the organizational patterns of sequence of events, cause and effect, and comparison and contrast of ideas used in written discourse. In addition, we help them formulate protocols for restating this information in a personally meaningful manner.

Strategies for learning from text are generally necessary but not sufficient for doing well in a college course. Students also need strategies for organizing, understanding, and remembering information given in lectures. We teach two types of strategies for using lecture information in our adjunct classes: note-taking in lectures and organization and integration of lecture information with text information.

Usually, recall of lecture information requires review of the information. Hence, one must take lecture notes. The value of note-taking is realized when using the notes for review (Pauk, 1974). When notes are to be utilized at a later date, students must record information in a meaningful way. We teach students strategies for organizing lecture information into specific categories: main idea, supporting details, vocabulary, pictorial, handout, and general information (Davis, 1982).

In addition to teaching note-taking strategies, we teach strategies for integrating lecture content with textbook content. To facilitate content integration, students share their lecture notes and discuss lecture content and implications. Text content is then discussed as it relates to information given in lectures; that is, did the instructor give new information, repeat text information, agree or disagree with the text. Such discussions enhance student awareness of appropriate strategies for organizing lecture information and facilitate integration of lecture content with text content.

Each of the strategies discussed [integration of lecture and text information, note-taking in lectures, recognition of organizational patterns, annotation of texts, and use of textbook aids to construct anticipation guides, (Readence, 1981) or advance organizers] are appropriate in all three adjuncts.

As noted earlier, however, some learning-to-learn strategies are more apt for a particular type of content. Therefore, in addition to teaching some strategies in all adjuncts, we teach other strategies only in specific adjuncts because recall of information is better when *encoding* and *storage form* match the *retrieval form* required in subsequent tests of knowledge (Ford, 1981). Hence, some strategies are more appropriate for organizing specific course content.

Specific Strategies

Each of the adjunct courses requires slightly different strategies. In the American Civilization course, students are required to learn many general concepts and even more specific details related to these concepts. One technique we teach to aid students in organizing this multitude of facts and concepts is construction of *graphic organizers* (Vaughn, 1982). Graphic organizers are important because, in addition to facilitating organization of information, they enhance recall of main ideas and specific details (Alvermann, 1982). Constructing graphic organizers requires students to become active information processors and interpreters. Steps we use in graphic organizer instruction include: (1) teaching the student to use a teacher-prepared graphic organizer, such as that suggested by Moore, Readence & Rickelman (1982) and (2) using the ConStruct procedure (Vaughn, 1982) to teach students strategies to prepare their own graphic organizers. In addition to teaching strategies for constructing graphic organizers, we also teach strategies for interpreting pictorial aids, summarizing, recognizing signal words and skimming and scanning in the American Civilization adjunct.

American Civilization requires a great deal of reading and synthesizing of information. The Informal Logic course requires in-depth reading of short expository selections. In Informal Logic, students are expected to read critically and understand arguments. To aid students in this critical reading task, we teach strategies of (1) recognizing relevant information, (2) making inferences, (3) judging the author's purpose, (4) drawing conclusions, and (5) forming opinions. For each of these critical thinking/reading skills, we first discuss explicit rules used by experts in making decisions. Students then do exercises (from simple to complex) requiring these skills. Finally, we use group discussion to analyze student success in using expert rules and/or in formulating their own rules.

In contrast to organizing a plethora of information or analyzing critically short expository selections, students in literature courses are expected to comprehend and evaluate critically the meaning of fictional works at a high level of sophistication. High level text comprehension depends upon prior background information as well as on knowledge of learning strategies (Brown, 1981). Many students in literature survey courses lack the prerequisite background knowledge which would facilitate critical evaluation. To enhance students' background knowledge, we teach the following general strategies: (1) understanding the character of people through actions, appearances, speech and thoughts; (2) denotation and connotation of words; (3) recognition of tone and mood; and (4) knowledge of literary symbols and forms such as metaphor and simile. For each strategy, we give explicit suggestions on how to use the concept when analyzing a literary work, examples of the concept's use, and then require students to use the concept in analyzing some reading required in the regular literature course.

Summary

Content of our adjunct courses includes both general learning-to-learn strategies and content specific learning-to-learn strategies. By teaching these learning-to-learn skills in a content area classroom situation, we are able to teach students to employ, monitor, check, and evaluate a specific strategy. We are also able to facilitate students' ability to recognize the appropriateness of a specific strategy in a particular learning situation based on the characteristics of the text and the explicit learning outcomes (course requirements) desired. Although they differ from one another, all our adjunct classes provide students with two requisites for success in college: availability of appropriate processing strategies and conscious control (metacognition) of their own learning processes.

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DEVELOPING COMPUTER SOFTWARE FOR STUDY SKILLS AND VOCATIONAL MATH

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That marvelous toy, the small computer, is uniquely adaptable for use in the Learning Skills Center. As a motivational device (gimmick, if you will), it is trendy, brief and to the point, and easily adapted to any level of proficiency. Its use can be quickly mastered by any student. Students find it fun and soon learn that they can do more than play games with it. Computers in a skills center are ideally suited to independent study or individualized instruction. My staff and I were eager to see what we could do to develop the computer programs we wanted for use with our students in our Skills Center.

I was fortunate enough to have a proposal accepted for developing computer software to use in a learning skills center. The two areas of concentration were to be a comprehensive study skills program and math programs for all the vocational disciplines in our college. This improvement of instruction grant requested approximately $7,000 for the project. The grant was accepted by the State of California, but the money amount was reduced to $5,000. This reduction in funds caused some reduction in the scope of the programs. We decreased the study skills programs from five to four, and math from eleven to nine.

Before the proposal was submitted, a considerable amount of research had to be done. I consulted with the heads of all the vocational departments in the college to discover what they would like to see in the way of a supplementary math program that would assist students in their particular department.

We identified needs and decided upon nine short math programs which would be specifically tailored to the following vocational areas: business, teacher's aide, forestry and natural resources, hospitality management, fire science, health fields, heavy equipment and auto technology, real estate and construction, and consumer math.

Since the study skills program was already under my direction, we merely identified areas of study skills which lent themselves to the computer format and which needed some different and interesting material. The four study skills programs we decided upon were library skills, test taking skills, study skills, and orientation to college.

Armed with this list of needs and the money from the grant, we next set out to obtain competent personnel to put these ideas into computer programs. Most important, probably, were the two professional consultants. At small stipends, I hired the department heads of the college's math department and the college's computer department, both extremely competent and approachable individuals. They were charged with the task of reviewing and correcting everything that was written and programmed to insure academic accuracy and validity. They were also to assist any of the individual writers or programmers with any problem encountered during the course of the work.

Developing the programs involved a great many people. Instructors, students, instructional aides, and staff helped in collecting, organizing, writing, and programming the material. Twenty-four people in all were paid employees on the project, and many more volunteers assisted with the project. The paid employees received a small stipend, and all had the opportunity to exercise their creativity while producing something useful for Columbia College.

Instructors in the nine vocational programs recommended people from their departments who, with the instructor's assistance, gathered materials, organized and developed the material, and wrote it into short programs which could be transformed into computer software. The computer science consultant recommended advanced students from his department to take these written programs and program them into computer tapes. The computer students looked upon this as a kind of apprentice arrangement and, without exception, they were delighted both to get their first paying job in computer programming and to exhibit their skill and creativity.

Matching program writer with program computer programmer was a major accomplishment. The people had to be able to communicate their ideas well with each other, and they had to have compatible work schedules. Eleven pairs of writer/programmer were assigned, each working under the direction of the vocational instructor, the two professional consultants, and me. Interestingly enough, we all got along very well.

These were the guidelines under which we worked:

1. There must be frequent face-to-face contact between the program writer, the instructor of that particular vocational area, and the programmer. Random notes placed in mailboxes would not suffice.

2. It would be better to divide the programs into two or three short segments than to produce one very long one.

3. While each program was intended to be used within the confines of the Skills Center, it should be usable as well in the department for which it was written.

4. The program should be able to be used by students of various academic ability levels.

5. The programs should be written in such a way that they could be enlarged or revised with additional material at a later date.

6. There must be a follow up to ascertain if the program was indeed useful to the specific area for which it was written. Provisions should be made for recommendations for future revisions.

The following computer software programs were developed:

I. Business Math (5 tapes)
II. Consumer Math (2 tapes)
III. Forestry Math (2 tapes)
IV. Math for the Health Field (2 tapes)
V. Fire Science (2 tapes)
VI. Math for Hospitality Management (2 tapes)
VII. Heavy Equipment Math (2 tapes)
VIII. Teacher Aide Math (1 tape)

Study Skills Programs

1. Orientation to College (2 tapes)
2. Library Skills (1 tape)
3. Test Taking Skills (2 tapes)
4. Study Skills (2 tapes)

The following are areas of math covered by the computer software programs:

Roman Numerals
Ratio and Proportion
Equations
Metric Conversions
Measurements and Formulas
Fractions and Decimals
Base, Rate, Portion
Fraction Exercises
Factoring
Algebra Terminology; Math Terminology
Interest and Percent Problems
Board Feet

To illustrate the type of information included, the Measures and Formulas program displays geometric forms with descriptions of the components as well as area and volume formulas. The second part of the program is a multiple choice exercise. In another math program, the metric conversion exercise, the computer will randomly enter a number in one unit and ask the user to convert to another unit of the metric measurement. The Business Math program provides practice in a multiple choice format with percent, decimal, fraction and conversion terminology. The second part is practice in conversions: fractions to decimals to percent.

In the study skills programs, the orientation tapes attempt to guide the beginning student over a few of the more obvious stumbling blocks and ease his or her way toward a more successful college career. The first part explains the college catalog and gives referrals for special assistance such as financial aid, personal problems, careers or academic help. The second part of the orientation tape comments on how to study. This is followed by twenty self evaluation questions on study habits and short answer with advice after each question. The questions cover areas such as study habits, note taking use of the library, outlining, study attitudes and listening to lectures.

One beneficial outcome of this grant and the work it entailed was the spirit of cooperation that grew and intensified between the Skills Center and the vocational departments for which we were writing math programs. Communication lines were open. Instructors were generous with their help and their constructive criticism. They also developed an increased appreciation for the role of the Skills Center as an aid and a back-up for their own work. The financial tightening in California schools has been, in part, responsible for this departmental interdependence. As we can no longer purchase materials to use in the Skills Center because of insufficient budget, we are forced to write more and more of our own, with the help and cooperation of the instructors in other departments. Our programs are now, we think, more finely attuned to the specific needs of the individual students here in Columbia College, but we have paid a price in much additional work.

Our Skills Center strives for flexibility, motivation, success-orientation and personalization of each student's work. Each of our students has different potential, different goals and needs, and different learning habits, requiring a variety of techniques to help each student achieve some measure of success. The computer adds another weapon to our arsenal of materials, devices, and techniques.

Many of our students have experienced failure after failure. For them, just learning the use of the computer is an accomplishment, and the self-correcting format of the software programs makes failure impossible. We found that such students lost their fear of the computer with just a few easy instructions, and found the tapes to be both interesting and enlightening.

WINNING SUPPORT FOR DEVELOPMENTAL SKILLS PROGRAM

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This is the year for defending developmental programs. Resources are drying up all around us, and everyone on campus is looking around for a program to point at and say, "Get them — not us." Service departments that don't lead directly to high paying industrial jobs can be the most vulnerable. If you've been in the business long, you know that we're dealing mostly with smoke and fear. Our programs, for the most part, are indispensable and easy to defend; nevertheless, it's expedient to have our acts together and to reexamine our effectiveness.

We know that literacy is a prerequisite for participation in society. We know that the technology explosion threatens to increase the gap between the haves and have nots in society. But, people who don't deal daily with the "high risk" student are not as aware of the number and needs of these students as developmental educators often assume.

The following pre-test is designed to help determine a college's commitment to developmental education. A score sheet sprinkled with "No" and "Some" responses will find the suggestions that follow helpful in winning necessary support for these essential programs.

Pre Assessment
Has the college:

	Yes	No	Some
a. Made a formal commitment to *Learning Assistance students?	☐	☐	☐
b. Included a commitment to student "preparedness" in its mission statement/goals?	☐	☐	☐
c. Communicated its commitment to learning assistance to campus? (Are staff members and students treated the "same" as other professional staff members and students?	☐	☐	☐

	Yes	No	Some
d. Defined a process to evaluate students' preparedness upon entry into the institution?	☐	☐	☐
e. Designed an advertising system that places students in classes in which they can succeed?	☐	☐	☐
f. Made a financial commitment to "instructional assistance" in terms of facilities, equipment and staffing?	☐	☐	☐
g. Made a commitment to developmental courses in its financial aid policies? (Can students receive financial aid for "remedial" classes?)	☐	☐	☐
h. Actively sought supplemental funds to *add to* program's services (grants that target specific populations).	☐	☐	☐
i. Provided mechanisms by which program can get external input and support? (advisory committees, alumni groups, etc.)	☐	☐	☐
j. Made efforts to publicize student and program successes?	☐	☐	☐

*We have purposefully referred to developmental studies by a variety of names, knowing that it has many labels.

Common Defenses of Development Skills at the College Level

The following defenses come from a wide range of sources and are applicable to a variety of situations. To enlarge on any of the following themes, refer to the Spring 1982 edition of the *ERIC Junior College Resource Review* entitled *Literacy in the Community Colleges* which provides a thoughtful overview.

1. The community is the winner when we have citizens who can communicate well and make informed decisions—and the loser when we waste human resources and allow people to remain trapped and frustrated by lack of education.

2. It is well documented that the academic competencies of youth have been declining while the competencies needed for employment continue to escalate. Our ability to compete in the international market is being seriously handicapped by lack of qualified technicians.

3. Recent studies have called attention to the millions of dollars lost annually by companies whose employees can't read directions or figure basic math.

4. Research proves that adult students in need of remediation are not necessarily less intelligent but have been deprived of some fundamental experiencing or conditioning in their lives.

5. We can document growth in reading skills, math skills and writing competency in students who have been placed in the appropriate classes. We know that some students experience 2, 3, and 4 levels of reading improvement in one term.

6. We can also document need for "up front" identification of students with skill deficiencies on the evidence that most students who drop out of programs do so during the first six weeks (shortly after midterm).

7. Developmental skills programs contribute to the institution. To have students enroll in programs and courses in which they have no chance for success is costly and creates poor public relations.

8. We complement the college's mission and goals and help make it possible for institutions to meet their moral and legal commitments to students.

9. By serving special populations, we attract funding to the college.

10. Retention of students is not as expensive as recruitment.

Techniques for Winning Friends at the Institution and in the Community

At Chemeketa Community College we have attempted to mobilize broad based support for our developmental skills program. We use two major visual aids when asked to present program information to boards and organizations. A brochure we've developed pictorially, graphically, and succinctly describes each major program and service in the Developmental Education department. Entitled "Unlock the Door," it features the department's emblem and the Pass Key which represents a series of study skills lectures offered to all students. The brochure allows staff members and advisory board members to present a department overview in an organized fashion, and it allows the audience to ask questions about programs of interest to them.

We also use a slide tape presentation that was developed at Portland Community College through a Federal 310 grant. It depicts students and instructors throughout Oregon's community colleges presenting their impressions of developmental classes. A professional photographer and a professional song writer have compiled these vignettes in a manner that never fails to warm up an audience The statewide figures on illiteracy and drop out rates are real eye openers for most audiences.

In order to establish ourselves as an integral part of the institution, we started with the college's mission and goals and developed department mission and goals that complement these. We are a department that can help further the college's goals to ". . . implement additional teaching methods to serve a greater variety of learning styles . . . Recruit and serve the non-traditional student . . . Continue to define and improve standards of student achievement." Our department mission states, "Consistent with the mission of the College, the Department of Developmental Studies will assist students in developing academic and personal skills necessary for success." Our philosophy and goals tell why and how the mission is carried out. The philosophy and goal statements also serve as a unifying factor for our staff and are used in orienting new members to our department.

Keeping the college board informed about our program is a high priority. Professional presentations, as well as regular updates about our services, student needs, and successes, help us win board support.

We also seek to publicize our services and successes among our colleagues throughout the college. Information about our services and ways to access them is distributed at pre-service training. Instructors are recruited to spend some of their office hours in the tutor center. An instructor who shares the success of a reading class for Fire Science, for example, may inspire other vocational instructors to request such a class. We take time to respond to requests for articles for various campus publications with statistics, as well as human interest stories.

To articulate our mission, faculty members are given many opportunities to relate to their colleagues in other departments. They serve on in-service planning committees, the curriculum committee, union committees, etc. Their offices are scattered throughout campus. As a result, they make friends throughout the various departments and divisions, and their friends call on them to help solve student problems.

The tutor center staff not only meet regularly with campus departments, but they also call upon talent throughout campus to help present Pass Key seminars to students in the areas of study and learning skills. Talent is also enlisted in designing eye-catching posters and brochures for both the tutor center and the Volunteer Tutor program. They regularly invite program input. They honor staff, students and community volunteers with "thanks" and recognition.

Our developmental education department has an advisory committee composed of agency representatives, ex-students, and public officials who need to be aware of the services we offer. This group has defined its mission and goals to complement program efforts. This year each advisory board member has a personal goal to present department information to at least two community organizations. In most cases they invite staff members to assist in these presentations.

In addition, several of our staff members are active participants in community organizations for disadvantaged and minority students.

In conclusion, we want to emphasize that good programs do and will "save" students from the revolving door syndrome. In demonstrating and publicizing our effectiveness, we win program support and, thus, the students win. The ultimate goal of program public relations is to have enough program friends who understand the program's mission so that program staff don't have to be the program defenders.

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HELPING STUDENTS UNDERSTAND THEIR TEXTBOOKS

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After teaching reading to college students for two years, this writer became discouraged to observe that many of his students were only marginally successful in courses that demanded lengthy textbook assignments. Even though these students had been drilled assiduously through the use of reading workbooks, they could not make what Basile (1978, p. 289) describes as "... the qualitative leap from understanding general reading skills to critically understanding textbooks in each discipline." This problem called for the development of a systematic method for reading and studying college textbooks. This method helped students to identify structured patterns in textbooks, to create corresponding diagrams, and to write test questions that agree with the patterns and monitor comprehension.

Certainly one problem with using textbooks designed for college reading classes is that most do not expound on the thinking processes necessary for reading. For example, most reading textbooks instruct students to find main ideas but do not provide a schema for this mental task. Coaches of sports, on the other hand, would never expect their students to perform complex physical tasks without delineating for them all the intricate details of each physical skill. The college reading instructor who expects students to find main ideas but does not explain how this is done can be compared to the tennis coach who expects his beginning players to serve "aces" (legal serves which are out of the opponent's reach) but does not describe and teach all the movements involved in serving.

Structured Patterns of Relationships

It is often assumed that students come to college prepared with the necessary thinking skills for reading; however, Brown (1982) states that some students in college do not know how to learn from textbooks. To learn from textbooks, students need to understand text structure, which involves recognizing how ideas in different sentences are integrally related to each other. In order to learn this, students were given a list and description (Figure 1) of eleven patterns that depict how ideas can be organized in textbooks. Many of the patterns on the list and its format were borrowed from Dr. Carl Spring (1982) of The University of California, Davis. The first four patterns were grouped under the heading called "recall patterns." These were composed of analysis, definition, description, and example. The other group was classified under the title of "critical reading patterns." These consisted of comparison, cause-effect, reasons, problem-solution, sequence, alternative, and significance. However, since many students at the beginning of the semester expressed the hope that the course might help them to improve their grades in content courses, the list also included examples of how the patterns could be transformed into study questions. This questioning strategy will be discussed later in the paper.

Students were assigned to read two or three page excerpts from college textbooks, deciding as they read which patterns best conformed to the text structure. The patterns, however, are frequently interchangeable since one

Figure 1
Textbook Patterns

Recall Patterns

NAME		DESCRIPTION	QUESTION
1. Analysis		Shows the different types or parts of something.	"What are the three types of ________?" "What are the parts of ________?"
2. Definition		Provides a definition for a term.	"What is ________?" "Define ________."
3. Description/ Property		Provides a visual picture of a concept. Mentions a trait.	"Describe ________."
	Function	Explains the purpose or role of something.	"What is the purpose of ________?"
	Location	Shows where something is located.	"Where is ________?"
4. Example		Provides an example of something.	"Give an example of ________."

Critical Reading Patterns

NAME	DESCRIPTION	QUESTION
5. Cause and Effect	Shows how something causes another thing.	“What has caused ______?” “What effect did ______ have on ______?”
6. Comparison	Shows how two or more things are similar and different.	“Compare ______ with ______.”
7. Sequence	Relates an event or process to another in time.	“What stage takes place after the ______ stage?”
8. Reasons	Provides reason for an idea.	“Why should capital punishment be abolished?”
9. Problem-Solution	Shows a problem and provides a solution.	“What can be done about ______?”
10. Alternative	Provides an alternative for something.	“What are several alternatives to ______?”
11. Significance	Implies an inference on the part of the reader.	“How can one apply this information to ______?”

student may identify a section of the text as “cause-effect,” while another may see it as “reasons,” and still another may react to it as a “problem-solution” relationship. For example, if one read that after the outbreak of World War II many policemen enlisted in the army and police departments had to create specialized units, one could choose one of several patterns for this text structure:

Cause: Police enlisting
Effect: Creation of specialized units

Statement: Police departments created specialized units.
Reason: Police enlisted in the military.

Problem: Loss of policemen due to military enlistments
Solution: Creation of specialized units

The efficacy of a structured strategy has been reviewed by others. Meyer, Brandt, and Bluth (1980) stated that a structure approach fosters systematic learning and becomes a useful retrieval technique. Tierney and Mosenthal (1982, p. 101) reported that text analysis may provide students with a "metacognitive awareness of text demand." The latter statement was shared with the students because it provides interesting insights on the process through which the brain selects the most appropriate pattern. To be cognizant of the brain's thinking processes, students were encouraged, initially, to proceed through a sequential question-answer approach. For example, when they read a textbook, they would answer a series of the following sample questions:

1. Is this *analysis?*
2. If yes, what are the different types of this concept?
3. a. If no to 1, is this *description?*
    b. If yes, is this a visual picture of the concept?
    c. If no, is this a property of the concept?
    d. If no, is this a function of the concept?
    e. If no, is this the location of the concept?
4. If no to 3a, is this *definition?*

This line of questioning would continue until the students answered in the positive and followed with an explanation. This procedure is analogous to programming a computer to perform certain functions. Through repetition, the process seems to become imprinted, and students can identify the patterns instantly.

Diagrams

Students are shown how to make diagrams that agree with the patterns they have identified. Diagrams allow students to visualize and remember the relationships of ideas. Below are some sample diagrams:

Figure 2
Analysis Diagram

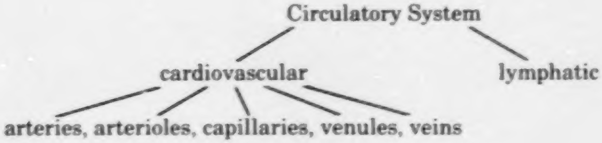
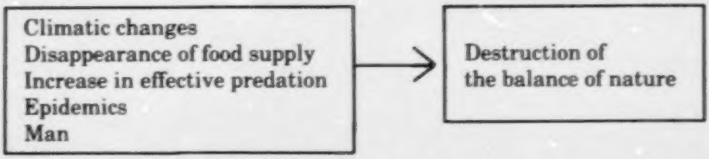

Circulatory System
cardiovascular
lymphatic
arteries, arterioles, capillaries, venules, veins

Figure 3
Cause and Effect Diagram


Climatic changes
Disappearance of food supply
Increase in effective predation
Epidemics
Man
Destruction of
the balance of nature

Study Questions

Once students identified the pattern, they had to write a study question to agree with their choice. For instance, if a student selected "cause-effect" as the appropriate pattern, his question might begin with "What causes ________?" or "What were the effects of ________?" Andre and Anderson (1978) found that students accomplished more learning by using the study question strategy than from the rereading approach. Writing study questions served three purposes: (1) evaluation method for the instructor; (2) comprehension monitor; (3) test preparation for the student.

If the instructor is going to evaluate the students' understanding of the patterns, it is not enough for students to name a pattern. Often, students may select a pattern but fail to justify the selection. When students write study questions, they are verbalizing the relationships of ideas and revealing their comprehension abilities.

When students monitor their own comprehension, their reading becomes an active process. Pitts (1983) reviewed the literature on comprehension monitoring and suggested that it can provide students useful techniques that will help them understand their comprehension abilities. When some students read, they are not aware of the thinking processes that are responsible for their own comprehension. Even good readers will probably admit that they are not conscious of what they do to achieve comprehension. That reading teachers presumably fall into the category of good readers has probably been a reason why they have not pursued the metacognitive approach to reading until recently. Students' inability to identify a pattern can signal them to take remedial steps until they are successful. These steps could include re-reading, testing additional patterns to find the one that best conforms to the text structure, and working to verbalize the relationship of ideas in the form of a new question. Unfortunately, poor readers continue to read with the futile hope that they will eventually achieve comprehension.

The last purpose for writing study questions is to anticipate exam questions. Students were instructed to write their study questions in the margins of the text near the section where the answer could be found. When students were preparing for exams, they practiced answering their study question. If they could not answer a specific question, they re-read the section to which the question applied. If they were successful in answering the question, they did not re-read the section; instead, they moved to the next question and continued the process. Students "rehearsed" answering their question on three or four different occasions so they would be well-prepared for their exams. Without training, poor students tended to write questions that require only a "yes-no" response or a phrase. Questions that agree with the patterns demand greater comprehension abilities on their part.

Although this approach to teaching reading comprehension was quite effective, this writer believes that reading teachers still need to spend more time thinking about comprehension strategies that can be useful to their students. Singer (1983) stated that reading teachers still need more information about teaching comprehension. At least they are starting to focus on the right area of reading.

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ABSTRACT

THE HUMAN MIND: IMPROVING RATE AND RECALL IN READING

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A partial review of Jacobson's book, *The Human Mind: A Physiological Clarification* (1982), this paper relates evidence regarding the development of reading and learning efficiency. It presents the thesis that knowing when and how to relax the human neuromuscular system is the key to improvement of reading rapidly with excellent comprehension and recall. Since 1965 the writer has experimented in the classroom with an adaptation of Jacobson's Progressive Relaxation technique. The key to memory appears to be relaxation. During this state potential energies are released. The writer observed, therefore, that with a relaxation technique to reduce distractions and fatigue, students may channel energies into better insight of what is read under pressure. They then relax for recall of what has been read. Sister Hucksoll used the writer's 2R (Reinforced Reading) Method and adapted relaxation technique with matched control and experimental groups in eighth grade. The control group made no statistically significant progress; however, the experimental group read post-tests eight times faster than pretests with over 10 percent better comprehension. Statistical differences were quite significant and tend to support the thesis.

PROBLEM SOLVING/READING MODULES FOR TRADE STUDENTS

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Problem solving/reading modules have been developed for teaching occupational reading to students enrolled in the trade programs of carpentry, automotive mechanics, electrical technology, welding and sheet metal, diesel mechanics, food service, and machine technology at Hawaii Community College, University of Hawaii at Hilo. The modules are designed to address the special needs of these trade students and to overcome problems that were encountered with the use of more traditional teaching methods.

Most of our trade students have poor reading skills, with an average comprehension score of 9.0 on the Nelson Denny Form C and an average score of less than 50% on the Industrial Reading Test. These students see little value in well-developed reading skills and perceive occupational reading as an unnecessary, irrelevant course that takes valuable time away from their trade programs. Their primary interest is in getting jobs in their trades, and they do not see a connection between these goals and a required reading class.

Reading Needs of Trade Students

These students need to become better readers. They need to sharpen the skills they already have by practicing reading, and they need to pinpoint and improve areas of weakness. For example, some students are proficient in locating main ideas in written materials but are unable to draw conclusions or make inferences. Materials used in an occupational reading course should, thus, provide general reading practice and specific skill development.

Second, trade sudents need to be able to read and understand complex technical materials. Students must be able to read a paragraph from a text or reference manual and respond to simple comprehension questions. This task is difficult because of the nature of the material. Technical writing contains maximum information in minimum space with complex tasks and ideas explained in short concise paragraphs using precise, difficult vocabulary. The important point is that trade students are expected to read and understand technical manuals, installation directions, licensing regulations, permits and forms. Even the best of readers find these materials tedious, confusing, time-consuming and frustrating.

Third, trade students need to be able to problem-solve on the job. To do this successfully, students need to analyze the situation, recognize what information is needed, know where to find it quickly, and apply that information to the specific situation. This task requires familiarity with and practice using the standard reference materials in their fields. Therefore, a major goal of an occupational reading course is to make reading material that is technical and difficult for the best of readers manageable and meaningful for reluctant readers.

Modules

Problem solving/reading modules are designed to help students learn how to manage technical material as well as improve their reading skills. All modules are based on existing technical materials used in a specific trade program. When possible, the appropriate trade manual is the subject of the initial module. Such manuals are a good place to start because they are usually lengthy, use small print, and contain complex information. To students, manuals represent the quintessence of their trades and the most difficult reading they have to do. Trade manuals that we have used include the Uniform Building Code, the National Electrical Code, and the Machinery Handbook.

The problem solving modules consist of a series of student activity worksheets that provide hands-on practice in using all sections of the manual. The worksheets are arranged sequentially and involve the student in increasingly more difficult tasks. The goal is to have the students become familiar with the information in and organization of the manual so that they can use it to solve problems on the job.

Each module begins with a cover page that outlines the terminal objectives, instructions, and materials needed. Each activity sheet is prefaced in the same manner, with objectives and instructions at the top. It is very important that the student knows exactly what is expected. Also, by including reading objectives with each activity sheet, the student begins to make a connection between learning to read better and learning more about his or her trade. Below is an example of the cover page for the machinist handbook module:

Machinist Module

Objectives: Each student will know how to use the machinist handbook, and be familiar with the format.
Each student will develop necessary vocabulary.
Each student will apply concepts from the manual to solve problems.

Instructions: Complete worksheets in order.
Materials: Machinist Handbook 18th Edition; Dictionary.

The worksheets are composed of three general types of activities: introductory, comprehension, and problem solving. Introductory activities include surveying questions and vocabulary development. In surveying, students are asked straightforward questions such as the number of chapters the reference material contains, and the page number of the index. This helps the student become familiar with the general organization of the material. Vocabulary development includes technical terms that apply only to the trade such as machinist words like "pawl" and "arbor", and difficult, frequently used words such as "comply" and "viscosity". Vocabulary sheets require the student to write or draw a brief definition of the word. The student uses the manual to assist in locating the answers to all the exercises.

Comprehension activities are designed to improve students' ability to read and understand technical material. Students read sections of the manual and answer general comprehension questions by locating specific information. The questions are written so that a student can identify a key word, look in the index, turn to the appropriate section and locate the answer. An example of the type of question taken from a carpentry module is "What are the specifications for handrails around open stairwells?" The student then looks up "handrails" in the index of the Uniform Building Code, turns to the appropriate section and finds the answer.

Problem solving activities are organized around word problems that simulate questions that arise on the job, as well as around application of theory. The object is to have the student go through a four step problem solving process. First, the student identifies the problem and what information he might need. Then, the student locates the information necessary to solve the problem. Next, the student reads the information and applies it to the problem situation. Finally, the student determines an appropriate solution.

For example, our carpentry module, which is based on the Uniform Building Code (1976) includes the following problem: You are hired to add an addition to a $20,000 house. The addition will cost $15,000. The existing structure has a set of stairs with 10" risers. Do you fix the stairs as well as build the addition? To answer the question, the student needs to know the regulations surrounding additions and the code requirements for stairs. According to the code, if an addition exceeds one-half of the cost of the existing structure then the existing structure must be brought up to code. The student checks on the height of stair risers and discovers that they cannot exceed 7½". Because this addition will cost $15,000 which is more than one-half of the cost of the existing structure and because the stair risers are too high to conform to present code, the student must fix the stairs as well as build the addition.

The length, use, and content of the modules varies depending on the trade and the composition of the class. Generally, however, the entire module does not take longer than two weeks to complete. Worksheets are designed so that students can complete one page in a 50 minute class period. The instructor is responsible for correction, although answers can be made available for student use. The topics vary. Besides manuals, the modules also deal with specific tasks such as applying for contractor's license and getting a building permit. One module in carpentry deals with reading a fake set of building blueprints and using the County of Hawaii specification requirements to locate errors on the prints.

Modules can be used in individualized instruction as well as large groups, in a classroom or learning center. New modules should be introduced to the entire class, but once students become comfortable with the procedures and questions they can be paired to work together.

Summary

Problem/solving/reading modules are an effective method of giving trade and industry students practice in general reading skills as well as teaching them how to read and use technical materials. Since the modules are all based on material that is trade-related, reading becomes relevant to the student. The student is, therefore, more likely to attend to the task and the student's attitude is more likely to be positive. The modules are flexible enough to accommodate a wide range of teaching situations.

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ESL COURSES FOR FACULTY AND STAFF: AN ADDITIONAL OPPORTUNITY TO SERVE THE CAMPUS COMMUNITY

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The Learning Assistance Center (LAC) at Stanford University served 2369 students last year. In 1981–82 the LAC gave undergraduates (and graduate students) 38 credit courses in critical reading, writing, study skills, tutoring, and peer counseling and 33 one to eight week workshops in study skills (e.g., reading rate improvement, test-taking techniques, and time management). The great majority of these students were university undergraduates who enrolled in one of the courses or workshops or who sought a tutor in some academic subject (usually mathematics or science). Others were law students who participated in the LAC-sponsored writing program at the Stanford Law School. And still others were that new kind of student, the adult learner—in this case, a very particular adult: the university employee. These students are the focus of this paper.

A secretary or maintenance worker on a university campus often does not have ready access to regular university courses. Class times conflict with work schedules and demands, and students have priority if classroom seats are limited. Nor are regular courses designed with the secretary or maintenance worker specifically in mind. Therefore, rather than attend classes on campus, university employees often go to their local school district's adult education program, enroll at the local community college, or take correspondence courses. They leave campus when they needn't. Often all the talent they need is right on campus. The kinds of courses traditionally offered at Learning Assistance Centers can, with relative ease, be tailored to serve the needs of university employees. Instead of providing learning assistance only to matriculated students, an LAC can expand its role, offering courses and workshops for faculty and staff. The LAC at Stanford has done just that.

Two years ago Stanford's Learning Assistance Center offered 13 courses in Reading, Writing, and Time Management. In the planning stage was a course in English as a Second Language (ESL). Today, Stanford's LAC offers 22 courses for faculty and staff, five of which are ESL classes. Each LAC Staff

Development course is special in two ways: it has been developed specifically in response to needs expressed by university staff members, and it provides the participant a series of individual conferences with the instructor as well as traditional classroom instruction (Table 1).

TABLE 1
Organization of LAC Staff Development Courses

	ESL	Writing	Time Management	Reading
Enrollment:	15 students	15 students	20 students	12–25 students
Duration:	8 weeks	8 weeks	4 weeks	8 weeks
Format:	2 classes per week; 4 half-hour tutorials. or 1 class per week; 5 half-hour tutorials. or 6–12 tutorials by contract.	8 classes; 5 half-hour tutorials.	4 classes; 2 forty-five minute conferences.	16 class meetings; 2 office hours available every week for conference.

To a large extent, ESL courses at the LAC are serving a new population on campus—the people in Food Service, for example, and the people who attend to landscaping and building maintenance—as well as scholars visiting from foreign countries. Many of these people have little competence in English. Some are in the lowest paid positions at the university and cannot advance due to their lack of language skills. They and their supervisors know that daily performance and, of course, advancement may depend on how much they can improve their English.

We offered our first ESL class in the fall of 1981. Though minimally publicized, this first course attracted over 30 interested employees, the first 15 of whom were admitted to the class. Instead of a more or less uniform group of intermediate-level non-native speakers, this first class was one of extremes. The participants' job categories ranged from lawn mower operator to visiting scholar. Their language backgrounds included Spanish, Chinese, Korean, Russian, Tagalog, Japanese, and French. Their formal training in English ranged from none to a few classes in their home countries to completion of a B.A. in this country. Their period of residence in the United States varied from two months to twenty years. Most importantly, the aspects of English they wanted to work on covered a wide range: basic pronunciation and comprehension; basic written English; more advanced writing focusing on letters and memos; the polishing of sophisticated prose of the type found in technical journals—all this in a single class of a quarter's duration.

Two problems were immediately apparent. First, there was a much greater variety in the needs and abilities of non-native speaking Stanford employees than we had anticipated. Second, the traditional format of courses offered to matriculated students in regular programs on campus was not adequate for classes designed for working adults.

To alleviate the first problem, we replaced our original single-course offering with a group of four courses and an individual tutoring program. These four courses correspond to the areas of greatest interest and need as expressed by both supervisors and employees (Table 2). Texts suitable for these four classes were selected, some of which are presented in Appendix 1. At the beginning of each quarter, those interested in taking one of these ESL classes meet with the instructor for a brief screening interview. The instructor explains what the course will cover and ascertains whether the individual would be able to profit from the course.

TABLE 2

Staff Development Classes in English as a Second Language
Offered Through the Learning Assistance Center, 1982–83

ESL BASIC—BASIC COMMUNICATION IN ENGLISH
Two hours a week of class, four 30-minute conferences per student. A very basic course for those with little knowledge of English. Participants are usually in entry level positions at the university and/or have been in the country only a short while. The course is offered only on request to sponsoring divisions of the university which can provide at least 10 students and a location in which to meet.

ESL I—SPEAKING AND UNDERSTANDING CONVERSATIONAL ENGLISH
One hour a week of class, five 30-minute conferences per student. (Stanford's Language Lab is also available.) For those who have some knowledge of English, but who have noticeable difficulties understanding spoken English or being understood when they speak in English. Practice in pronunciation and listening skils. Some work with English spelling as related to pronunciation of written words. Limited to 15.

ESL II—BASIC WRITING IN ENGLISH AS A SECOND LANGUAGE; READING
Two hours a week of class, four 30-minute conferences per student. For those

whose speaking and understanding of English are adequate, but who have had little experience writing in English. Review of sentence structure and basic grammar. Short weekly writing assignments. Some practice in reading and understanding written instructions and responding appropriately in writing. Limited to 15.

ESL III—INTERMEDIATE WRITING IN ENGLISH AS A SECOND LANGUAGE
Two hours a week of class, four 30-minute conferences per student. For those who are fairly fluent in English, but whose writing shows significant weaknesses in grammar, usage and idiomatic constructions. Focus on understanding and practicing the conventions of written English. Limited to 15.

ESL TUTORIALS—TUTORIAL INSTRUCTION IN ANY ASPECT OF ESL
Participants contract for a specific number of sessions (six to twelve sessions spread over eight weeks). Those people who complete one of the above ESL courses may wish to continue with these tutorials. Also recommended for those who wish to work on only one specific problem.

GENERAL NOTES:

1. All ESL courses run for eight weeks.
2. Those interested in ESL I, II, or III meet with the instructor before the class begins for a screening interview in order to insure placement in the class best suited to their needs.

To deal with the second problem, the question of format, we have adapted our courses to the learning styles and job pressures associated with adult learners. ESL classes offered to college students tend to follow traditional patterns of three to five hours of instruction per week, mandatory attendance, regular homework and grades. Adult learners, however, often have difficulty with such a format, especially when they are working full time. Their jobs sometimes cause them to miss class or a homework assignment. In addition, many of the participants do not have strong student backgrounds, and may, in fact, have had little formal schooling of any kind. Classes are structured to accommodate these differences.

First, most courses are offered during the noon hour when office workers are usually free. Even though many supervisors willingly provide two or three hours of released time per week for participants to take job-related classes, participants themselves seem to feel happier when they don't have to miss work. (However, the noon hour is not always the best time; for example, Food Service workers, many of whom need assistance in ESL, are busiest at that time.) Second, regular class meetings are limited to one or two hours per week. Although this does not provide the optimum number of hours of instruction, it does make it easier for university employees to attend regularly and provides the structure for group work and assignments. To make the class sessions as effective as possible, enrollments are limited to 15, assuring that everyone has a chance to participate.

The most important accommodation, however, has been the individual conference. Each participant is entitled to at least four conferences with the instructor. The conferences, scheduled at times mutually convenient for both instructor and student, are half-hour tutorials in which the student and instructor work on areas of particular interest or difficulty. These conferences are spread out over the eight weeks of the course, but students may also request additional conferences both during the course and after it is over. Some people have returned a year later to request help with job applications or resumes.

The LAC's ESL courses for faculty and staff (like the Center's other Staff Development classes) receive very high evaluations from participants. Employees feel that their time is well spent, that they have learned a lot. But, of course, miracles do not occur. Both the Learning Center and the Staff Development Office should be realistic about what they expect to achieve when they offer courses in ESL. A few hours of instruction, even coupled with individual conferences, are not going to produce radical changes in an individual's English usage. Such a process is necessarily a slow one.

In conclusion, one might ask, why should a university offer ESL classes to its employees? For one thing, an increasing number of non-native speakers are part of the work force. Many of these individuals are in entry level positions, held back from advancement because of their poor skills in English. One of our first students was a Nicaraguan refugee who drove a lawn mower at Stanford; in Nicaragua he had been a professor of Agriculture. Such individuals are highly motivated and eager to work on improving their English, especially when they can take Staff Development classes offered on campus by instructors who are familiar with the operations and "rhythms" of their work day. But it is not only the employees who benefit from ESL classes. The university as a whole stands to benefit as the English skills of its employees improve and, consequently, their morale and productivity.

APPENDIX

Bartley, D. E. (Ed.). (1979). *The adult basic education TESOL handbook*. New York: Collier MacMillan International, Inc. Thirty-two essays covering a wide variety of problems (and some solutions) in ABE and ESL.

Danielson, D. & Hayden, R. (1973). *Using English—your second language*. Englewood Cliffs, NJ: Prentice-Hall. Good text for intermediate ESL writing students. Good material on articles, and verb forms.

McCallum, G. P. (1970). *Idiom drills for students of English as a second language*. New York: Harper Row.

McCallum, G. (1978). *More idiom drills for students of English as a second language*. New York: Harper Row. More idioms than you really want to know about, but a good source and text for those fairly high level students who request work in this area. A set of tapes is also available (check your Language Lab).

Morley, J. (1979). *Improving spoken English*. Ann Arbor, MI: University of Michigan Press. A very good text for pronunciation and listening comprehension classes. An excellent set of tapes is also available, and is really necessary for this text to be used effectively.

Rivers, W.M. & Temperly, M.S. (1978). *A practical guide to the teaching of English as a second or foreign language*. New York: Oxford University Press. Highly recommended to those who have little or no experience in teaching ESL.

Schor, S. & Fishman, J. (1978). *The Random House guide to basic writing*. New York: Random House. Though designed for native speakers, this text has excellent sections on verbs, subject/verb agreement, punctuation and, most helpful of all, spelling.

Wigfield, J. (1982). *First Steps in Reading and Writing*. Rowley, MA: Newbury House Publishers. Excellent for *very* basic classes in ABE/ESL. Each lesson works on listening, speaking, reading and writing in small manageable units.

COMBINING STUDY SKILLS INSTRUCTION WITH SUBJECT MATTER TEACHING AND TUTORING

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Students may be taught the study skills necessary for them to become independent and successful learners in two ways: (1) they may take a course or workshop in study skills and (2) they may learn and practice study skills in the context of another class. There appears to be a growing interest in this second option. Erlich and Kennedy (1983) say that they see an unmistakable trend to integrate basic skills instruction, including study skills instruction, with content area courses. These authors describe how eleven liberal arts faculty at Ithaca College, New York, were trained by basic skills instructors to integrate note-taking, textbook reading, writing, and other basic learning skills into their regular content area classrooms. Evaluation suggests that "the most valuable products of the project were the teaching methods the faculty developed and the innovative changes they introduced into other humanities and science courses" (p. 27).

In Gruenberg's (1983) report on her recent survey of college basic skills programs, she notes that respondents identified the most effective programs as having "a college-wide commitment and cooperation among skills teachers and teachers of other courses" (p. 2). Respondents also preferred class materials that were keyed to regular college classes, and reported particular ways in which all faculty could work together to help students achieve skills improvement. Included were team teaching across academic department lines, using learning center staff to provide faculty workshops, and inviting faculty to participate in learning center activities.

Harding (1981) reports that the University of Wisconsin at Eau Claire offers content classes taught with two adjunct sessions per week in which study skills are integrated with subject matter. She states that learning skills are easier to teach in this format because students perceive their relevance and importance. She notes, "Also, students are forced to practice the skills over and over again so they tend to become regular study habits and to be transferred over to other courses" (p. 116).

Because of this recent interest in combining study skills with subject matter instruction, learning specialists are frequently asked to conduct study skills workshops for faculty and tutoring staffs. This is a challenging request because time is always limited; workshop participants usually have different interests and needs, and no group of teachers or tutors likes to sit still for long lectures on study skills. They almost always prefer to participate and apply new information to their particular needs. The purpose of this paper is to present a workshop format that learning specialists may use to guide them when they are requested to instruct content faculty and tutors in methods of study skills instruction. The format is flexible so that it can be adapted to different time frames and audiences. It also encourages participants, through active group planning and reporting, to relate particular study skills to their own subject matter and teaching methods.

Planning the Workshop

A workshop planning sheet can help systematize the initial workshop preparation. Such a sheet would include writing out information about the following ten items:

1. *State the place, date, and occasion of the workshop.*
2. *State the amount of time allowed.*
3. *Analyze the audience.* Estimate the number of participants. This helps you plan group work. Then, describe the particular characteristics of the participants. Think about their background and experience, their interests, their preferences and biases, and the students they teach.
4. *Write a statement of purpose for the workshop.*
5. *Write a title.*
6. *Make a list of study skills topics for the group to work with and assemble supporting starter materials.* Plan one topic for each small group of three or four participants. Thus, for a group of 30 participants, ten topics would suffice. This workshop format has been used with groups numbering 100–175 participants. In such cases, twenty or more topics are needed, and each group may include as many as six or eight participants. Study skills handouts that explain a particular study skill or demonstrate its use should be assembled to illustrate each topic. These starter materials will also promote group brainstorming and the invention of ideas for later reporting.
7. *List the workshop segments and time allotments and prepare an agenda.* Typical segments will include:
   a. Opening remarks that include definition of study skills and suggestions for assessing students' present study skills.
   b. Instructions for group work that include an explanation of the starter materials and a model report.
   c. Group work for twenty minutes, if time allows. Groups will use starter materials to brainstorm and prepare reports on their assigned topics. These reports will be similar to the model report.

  d. Break for ten minutes, if time allows.
  e. One member from each group presents a three-to-five minute report on the group's study skills topic.
  f. Presenter's summary comments.

8. *Write a sample outline for the group reports and a sample completed report.* These may be prepared on newsprint with magic markers so that they may be read easily by the participants. A sample group outline might follow a simple format: identify the problem and list solutions. Or, a more complex format such as the following may be used:

SAMPLE REPORT OUTLINE

  a. Identify the study skill that needs improving.
  b. Describe how to introduce this study skill into the class or tutoring session. Plan a transition that links the study skill to a class topic, activity, or particular student class responsibility.
  c. Give instruction on the study skill. Include an initial explanation, a demonstration of the skill in use, and an opportunity for the students to practice the skill.
  d. Plan how to reinforce the instruction in the future.
  e. Make a list of instructional needs such as handouts, books, transparencies, films, or other materials.

9. *Describe the physical facilities required.* Plan for the number of tables and chairs suitable for the small group work you have planned.
10. *List the instructional materials you will need to bring to the workshop.* These may include agendas, lists of study skill topics, packets of starter material handouts, magic markers, large sheets of newsprint, masking tape, a sample report outline, a model demonstration report, topic placards, and study skills reference texts.

Conducting the Workshop

The workshop and group activities will be productive if the following details are observed:

1. Arrange the tables and chairs for the groups you anticipate before the participants arrive. Place a study skills topic placard, a sheet of newsprint, and a magic marker on each table.

2. As they enter the room, hand participants folders that contain the agenda, list of the study skills topics to be reported on, and the starter materials. Invite each participant to sit at a table that has an interesting placard.

3. Make the opening remarks. In defining study skills, it is useful to group them according to three categories: (1) *good advice,* such as establishing a study place or making a study schedule; (2) *desirable behavior and habits,* such as improving concentration, controlling stress and anxiety, or analyzing and meeting class responsibilities; and (3) *academic communication skills* such as reading textbooks, writing exams and papers, listening to

lectures and taking notes, and participating in discussion and giving oral reports. In recommending methods for assessing present study skills include informal reading inventories, writing samples, lecture note samples, and brief oral reports. In giving instruction for the group work, explain how starter materials can start group brainstorming, advise each group to select a scribe, and give a demonstration to serve as a model.

4. Circulate while groups prepare their reports and give suggestions if necessary to encourage productive activity.

5. Manage the reports by helping the speaker tape up the report and by using time signals. As soon as each report is completed, state briefly what you liked best about it.

6. Summarize the main points about study skills instruction that have been made during the reports. Point out particularly that participants are now leaving with ideas and materials to help them integrate a variety of study skills topics with their regular teaching or tutoring.

A sample training packet that includes an agenda, list of study skills topics and starter materials may be obtained by writing to The Study Skills and Tutorial Services Department, University of Texas at El Paso, El Paso, Texas 79968 and enclosing $5.00 to cover the costs of reproduction and postage.

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BASIC SKILLS TESTING AND PROGRAMMING FOR REMEDIAL READING

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In recent years educators have become increasingly concerned over the growing lack of basic skills exhibited by students. As Robbins (1981) indicates, this lack of skills is particularly devastating to the student when the deficiency is in reading, as reading skills are required in every subject area. The New Mexico State Department of Education, in response to the public's concern over lack of basic skills, has mandated that all students of teacher training programs demonstrate competency in basic skills prior to admission into upper division course work. These mandated basic skills include reading, mathematics, and language arts skills. New Mexico State University and its teacher training programs in the College of Education have developed a series of courses in reading basic skills for those students in need of reading remediation. These include courses designed to develop vocabulary, comprehension, and critical reading skills.

A necessary aspect of the program is the selection process by which students are identified and placed in the appropriate basic skills reading class. The issue of identification and placement of remedial readers raises a number of questions (Call, 1982). This study is an attempt to answer one vital question inherent in programs of reading comprehension. Specifically, how can college personnel economically identify those students deficient in reading skills? To this end, we have examined the efficacy of utilizing American College Test scores as predictors of reading skill. Another aspect of the study, of crucial importance, concerned the development and sequencing of courses. Given efficient and appropriate identification of disabled readers, what plan will be utilized to remediate these deficiencies?

Reading skills of 155 college freshmen were assessed by a standardized measure of reading performance, the Nelson-Denny Reading Test (1981). Further, the reading skills, as measured by the Nelson-Denny, were compared with student's ACT scores. In this way the efficiency of ACT scores as predictors of reading performance was examined. On the basis of our analysis we offer a number of recommendations and cautions.

The 155 college freshmen employed in the study comprise approximately one-half of the student enrollment in the English Basic Skill Program at New Mexico State University. As such, one unifying characteristic of the sample is that each student received a standard score of 19 or less on the ACT English scale. The total Nelson-Denny grade equivalence scores for the entire sample are displayed in Table 1. One data point, evident in the table, is that 75% of the 155 freshmen received total Nelson-Denny grade equivalence scores less than 13.0. That so large a proportion scored below their actual grade placement is neither incredulous, nor discouraging. Rather, this demonstrates the close relationship between reading disability and deficits in language arts.

TABLE 1
Grade Equivalent Scores of 155 NMSU Students Enrolled
in Basic Skill Courses—Fall 1982

N	G.E.
1	3.0– 3.9
1	4.0– 4.9
6	5.0– 5.9
3	6.0– 6.9
11	7.0– 7.9
16	8.0– 8.9
16	9.0– 9.9
26	10.0–10.9
19	11.0–11.9
17	12.0–12.9
17	13.0–13.9
12	14.0–14.9
4	15.0–15.9
6	16.0–16.0+

In order to develop an efficient method of identifying students with reading deficits, we constructed a number of regression models, each predicting the subject's total Nelson-Denny reading grade equivalent score from existing ACT scores. The degree of accuracy of this prediction permits the assessment of the utility of predicting reading performance, given ACT data.

One approach to predicting reading performance given ACT data is to construct a simple regression model utilizing composite ACT as the predictor variable.

$$\text{Total ND GE} = 5.65 + \text{Composite ACT } (.40)$$

A more powerful approach to predicting reading performance given ACT data is to construct a multiple regression model utilizing three scales of ACT as predictor variables. This is based on the literature that English, Social Studies and Natural Science are more indicative of reading performance.

Total ND GE = 4.71 + SocSci ACT (.15)
+ NatSci ACT (.14) + English ACT (.19)

Why is multiple regression a more accurate predictive model? In the simple regression model the relationship is described by the correlation coefficient of .62. Thus 36% of the variance in reading as measured by the Nelson-Denny is accounted for. The multiple regression relationship is described by the multiple correlation coefficient of .70; thus 49% of the variance in reading is accounted for.

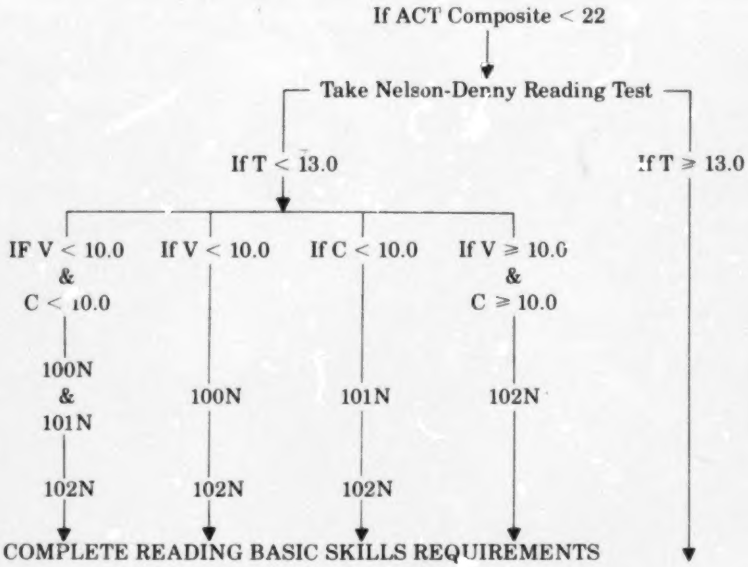
Of the two predictive models previously cited, the accuracy of their respective predictions is limited by their respective standard error of estimate. The accuracy of our simple regression model is limited by the standard error of estimate of 2.14 grade equivalents. This indicated that 68% of the time the true value will be within +2.14 and −2.14 grade equivalents. Thus, if we predict a student's reading grade equivalent to be 13.4, we have to add and subtract 2.14 to determine a range whose lower limits are 11.26 GE and upper limits are 15.54 GE. This is also true for our multiple regression when the standard error of estimate is equal to 1.9 GE. If we predict a student's reading grade equivalent to be 13.4, we have to add and subtract 1.9 so that the range is from 11.5 to 15.3 grade equivalents. Therefore, such inherent inaccuracy of prediction discredits the application of reading program placement based solely on ACT scores.

Thus it appears that ACT scores alone cannot serve as accurate predictors of reading performance. Rather, a more specific measure directed at the assessment of reading skills is required. It seems necessary that a direct measure of reading skills, such as the Nelson-Denny Reading Test, be administered to incoming freshmen whose ACT scores fall below median levels. The standard error of measure of the Nelson-Denny, as derived from the manual, is 1.3 grade equivalents. As such, use of the Nelson-Denny permits a more accurate assessment of reading. Further, the Nelson-Denny Reading Test directly addresses those components which are thought to comprise the reading act, i.e., vocabulary and comprehension. By using the Nelson-Denny, appropriate placement in basic skills reading series is probable. This use is consistent with recommendations presented in a review of the test by Cummins (1981).

The use of a direct measure of reading skills, such as the Nelson-Denny Reading Test allows placement of students into courses which are directly related to the student's needs. Such placement is possible only through accurate assessment of reading skills. A proposed series of remedial reading courses, each designed to meet the needs of the disabled reader, is displayed in Table 2.

Reading 100N is an intensive course in vocabulary building, emphasizing the technical and specialized vocabulary needed in college and universi-

TABLE 2
Nelson-Denny Reading Test Scores
and Course Work Sequences


If ACT Composite < 22
Take Nelson-Denny Reading Test
If T < 13.0
If T ≥ 13.0
IF V < 10.0 & C < 10.0
If V < 10.0
If C < 10.0
If V ≥ 10.0 & C ≥ 10.0
100N & 101N
100N
101N
102N
102N
102N
102N
COMPLETE READING BASIC SKILLS REQUIREMENTS

V: Reading Vocabulary Score in Grade Equivalents
C: Reading Comprehension Score in Grade Equivalents
T: Total Nelson-Denny Score in Grade Equivalents

ty study. Specific areas covered include the use of context, structural analysis, the use of reference sources such as dictionaries and thesauri, and other topics such as spelling and pronunciation, synonyms, and etymology.

Reading 101N is an intensive course in comprehension development. Emphasis is placed on the discriminative reading skills involved in college study. A taxonomy of comprehension skills is followed, including recall, interpretation, extrapolation, and evaluation.

Reading 102N focuses on applied problems in critical reading. This course develops fundamental study skills and vocabulary using the student's own textbooks when feasible. In addition to comprehension skills and vocabulary development, study skills such as previewing, establishing a purpose, setting flexibility in reading rate, outlining, summarizing, and reviewing are covered.

At the end of each course, the Nelson-Denny Reading Test is administered. If the student achieves a Total score of 13.0 or higher, the Basic Skill requirement is considered to be met. If the student does not achieve a 13.0 by the end of 102N, an individual achievement test is administered. The student may request to take the individual test one time prior to the completion of the sequence of courses. The individual test is an option for those students who may lack the speed necessary to demonstrate competency on the Nelson-Denny.

Reading courses, highly similar in both content and purpose, have been offered at NMSU. Examination of pre- and post-test data has indicated significant gains in reading skill, as measured by the Nelson-Denny. We attribute these gains to the effectiveness of placement and instruction.

The effective remediation of reading deficits necessitates a multifaceted approach. Disabled readers must first be identified; once identified, the disabled readers should then be placed in a sequential series of classes, geared to their individual reading needs. Our data indicates that accurate assessment of reading performance cannot be made on the basis of ACT data alone. Rather, a specific measure of reading performance is required. Further, we contend that a series of reading classes should be organized such that course content is reflective of the individual needs of the disabled reader. In this manner we can assist the undergraduate students in their efforts to maximize their learning experiences.

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